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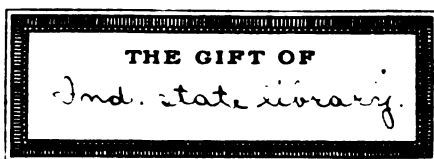
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THIRTIETH ANNUAL REPORT

OF THE

**State Board of Health
of Indiana**

FOR THE

**Fiscal and Board Year ending September 30, 1911
Statistical Year ending December 31, 1911**

To the Governor

**INDIANAPOLIS:
WM. B. BURFORD, CONTRACTOR FOR STATE PRINTING AND BINDING
1912**

**THE STATE OF INDIANA,
EXECUTIVE DEPARTMENT,
December 1, 1911.**

Received by the Governor, examined and referred to the Auditor of State for verification of the financial statement.

**OFFICE OF THE AUDITOR OF STATE,
INDIANAPOLIS, January 6, 1912.**

The within report, so far as the same relates to moneys drawn from the State Treasury, has been examined and found correct.

**W. H. O'BRIEN,
*Auditor of State.***

JANUARY 6, 1912.

Returned by the Auditor of State, with above certificate, and transmitted to Secretary of State for publication, upon the order of the Board of Commissioners of Public Printing and Binding.

**MARK THISTLETHWAITE,
*Secretary to the Governor.***

Filed in the office of the Secretary of State of the State of Indiana, January 6, 1912.

**L. G. ELLINGHAM,
*Secretary of State.***

Received the within report and delivered to the printer January 6, 1912.

**ED D. DONNELL,
*Clerk Printing Board.***

MEMBERS OF THE INDIANA STATE BOARD OF HEALTH.

FRED. A. TUCKER, M. D., President.....Noblesville.
T. HENRY DAVIS, M. D., Vice-President.....Richmond.
JAMES S. BOYERS, M. D.....Decatur.
JOHN R. HICKS, M. D.....Covington.
J. N. HURTY, Phar. D., Secretary.....Indianapolis.

LETTER OF TRANSMITTAL.

INDIANAPOLIS, November 30, 1911.

HON. THOMAS R. MARSHALL, *Governor of Indiana*:

SIR—I have the honor to present herewith the report of the State Board of Health for the fiscal and Board year, ending September 30, 1911. The law says: "They (State Board of Health) shall annually, on or before the first day of December, make a report to the Governor of their transactions and expenditures for the year ending September 30th next preceding, with such suggestions with regard to legislation as they may deem important in reference to the public health."

The Vital Statistics Law commands: "The State Board of Health shall make an annual report of all vital statistics for each calendar year to the Governor, the same to be published with their report of transactions and expenditures for the fiscal year by the commissioners of the public printing and stationery."

It is obviously impossible to furnish the vital statistics for the calendar year at this time, for the year is not ended. Even when the year is ended, December 31st, it will take at least three months, and very likely four months (with our present office force) to classify, tabulate and analyze the thousands of deaths and births which have been reported to this office. It will be necessary, therefore, to hold the manuscript herewith submitted, or it may be printed, and the statistical report, when ready, can be printed and bound with it.

We interpret the command of the law, "report of transactions," to mean that we shall give a complete account of the work of the Board, as appears in the minutes, but eliminating from said minutes such proceedings as pertain to mere routine affairs which must occur from month to month.

I am sir, with highest respect,

Very respectfully,

J. N. HURTY,
Secretary.

THIRTIETH ANNUAL REPORT
OF THE
INDIANA STATE BOARD OF HEALTH.

HON. THOMAS R. MARSHALL, *Governor of Indiana*:

SIR—The Indiana State Board of Health, in accordance with the law, has the honor to present herewith its Thirtieth Annual Report.

CONTENTS.

This report gives in full the "transactions and expenditures" of the Board for the year ending September 30, 1911; gives also full reports of the work done by the Pure Food and Drug and the Bacteriological and Pathological laboratories, and the Statistical Department.

THE HEALTH OF THE STATE.

The health of the State for the year of this report, as gauged by the mortality and morbidity reports herein set forth in detail, was better than in the preceding year. The death rate shows a decrease of 0.2 per 1,000, which indicates a saving of 1,400 lives. The lessened amount of sickness which attended the decrease in mortality can only be estimated, and we place the same at 30,000 fewer cases than in the preceding year. This saving has resulted from the fact that the people are learning how to more nearly live in accordance with the laws of their well-being. The newspapers and periodicals have been efficient disseminators of health information and the State and local health authorities have been active in the same work. The State Board has distributed over 100,000 circulars upon the prevention and control of the infectious diseases and it is constrained to believe that this instruction has done much good. The correspondence of this Board, with its many inquiries for "health knowledge," show that the people are deeply interested in disease prevention and are anxious to enjoy better health and to reap the rewards of higher efficiency and longer life.

SANITARY WORK DONE.

The ability of the Board to do more and better work in the interests of public health, was augmented in this year by the appointment of an assistant secretary. The incumbent of the position is Dr. Wm. F. King. His information in the science of hygiene and his high intelligence and zeal has made possible the accomplishment of much work which would not otherwise have been accomplished. The text of the report will show that numerous "health visits" have been made, both upon the initiative of the Board and because of invitations and requests from the people and from local authorities. As a result of these visits, a large number of nuisances affecting the public health have been abated; advice to local authorities has been given and positive directions also; epidemics have been controlled and better still, by timely action have been prevented; and the better sanitation of school properties in scores of instances has been secured. Upon the occasion of these visits the school children have always been called together for special instructions in regard to personal and public hygiene. We have high faith that this instruction has been productive of good.

OUR NEW SANITARY LAWS.

In the reports of this Board for several years earnest recommendations have been made that laws be enacted to insure the building hereafter of sanitary schoolhouses, to secure the medical inspection of school children, to prevent the pollution of streams, to secure better birth statistics, to decrease blindness and to govern the sanitation of food producing establishments. As Governor of the State you gave your hearty support to these beneficent and practical measures and to this action is largely due the fact that they became law. We have no results as yet to record from the operation of the sanitary schoolhouse, medical inspection and prevention of blindness laws, for they are barely in action at this time. But we have to say of the antipollution of streams and sanitation of food producing establishment laws, that they have done and are doing good work. The report of the hygiene laboratory gives the details.

Among the new sanitary laws we must count the one of the Ways and Means Committee, which gave an increased appropriation for public health purposes. We shall give a full report of the

disease prevention work, which we shall be able to do on account of this increase.

Approved by the State Board of Health and ordered transmitted to the Governor.

Attest:

J. N. HURTY,
Secretary.

FINANCIAL STATEMENTS.

INDIANA STATE BOARD OF HEALTH.

For Fiscal Year October 1, 1910, to September 30, 1911.

1910.		
Oct. 14.	To Dr. George T. McCoy, board meeting.....	\$12 75
" 14.	To Dr. T. Henry Davis, board meeting.....	12 75
" 14.	To Dr. Fred A. Tucker, board meeting.....	12 01
" 31.	To Dr. C. A. Carter, salary.....	100 00
" 31.	To Mrs. Eva Case, salary.....	50 00
" 31.	To Miss Ethel Hoffman, salary.....	50 00
" 31.	To Miss Louise Lingenfelter, salary.....	50 00
" 31.	To Miss Fannie Stevenson, salary.....	50 00
" 31.	To Miss Miriam I. Tull, salary.....	50 00
Nov. 4.	To Addressograph Co., merchandise.....	1 12
" 4.	To Aetna Cabinet Co., merchandise.....	17 00
" 4.	To Aquos Distilled Water Co., merchandise.....	1 00
" 4.	To L. S. Ayres & Co., merchandise.....	15 95
" 4.	To W. H. Bass Photo Co., merchandise.....	1 55
" 4.	To Clark & Roberts, merchandise.....	15 00
" 4.	To Adams Express Co., services.....	4 92
" 4.	To American Express Co., services.....	2 48
" 4.	To United States Express Co., services.....	2 00
" 4.	To Fertig & Kevers, merchandise.....	70 50
" 4.	To F. A. Hardy & Co., merchandise.....	5 00
" 4.	To Indianapolis Seal Stamp Stencil Co., merchandise.....	85
" 4.	To Smith Premier Typewriter Co., merchandise.....	6 00
" 4.	To W. K. Stewart Co., merchandise.....	12 35
" 4.	To Central Union Telephone Co., tolls.....	9 00
" 4.	To Indianapolis Telephone Co., tolls.....	6 45
" 4.	To Western Union Telegraph Co., tolls.....	3 28
" 4.	To J. L. Anderson, expense.....	8 54
" 26.	To Dr. George T. McCoy, board meeting.....	12 25
" 26.	To Dr. William N. Wishard, board meeting.....	10 00
" 26.	To Dr. T. Henry Davis, board meeting.....	13 25
" 26.	To Dr. Fred A. Tucker, National Teachers' Association and board meeting.....	133 16
" 30.	To Dr. C. A. Carter, salary.....	100 00
" 30.	To Mrs. Eva Case, salary.....	50 00
" 30.	To Miss Ethel Hoffman, salary.....	50 00
" 30.	To Miss Louise Lingenfelter, salary.....	50 00
" 30.	To Miss Fannie Stevenson, salary.....	50 00
" 30.	To Miss Miriam I. Tull, salary.....	50 00
Dec. 6.	To Aquos Distilled Water Co., merchandise.....	2 00
" 6.	To Wm. B. Burford, printing and stationery.....	611 44
" 6.	To Adams Express Co., services.....	4 50

Dec. 6.	To American Express Co., services.....	\$4 21
" 6.	To United States Express Co., services.....	45
" 6.	To C. P. Lesh Paper Co., merchandise.....	18 90
" 6.	To Central Union Telephone Co., tolls.....	3 15
" 6.	To Indianapolis Telephone Co., tolls.....	2 15
" 6.	To Western Union Telegraph Co., tolls.....	1 51
" 6.	To J. L. Anderson, expense.....	4 87
" 6.	To Dr. C. A. Carter, expense.....	2 40
" 9.	To Dr. George T. McCoy, expense.....	64 00
" 31.	To Dr. C. A. Carter, salary.....	100 00
" 31.	To Mrs. Eva Case, salary.....	50 00
" 31.	To Miss Ethel Hoffman, salary.....	50 00
" 31.	To Miss Louise Lingenfelter, salary.....	50 00
" 31.	To Miss Fannie Stevenson, salary.....	50 00
" 31.	To Miss Miriam I. Tull, salary.....	50 00
" 31.	To Mrs. Florence Vollrath, salary.....	25 00
Total for first quarter.....		\$2,183 72

1911.

Jan. 13.	To American Medical Association, Journal, reprints and dues	\$70 00
" 13.	To American Medical Pub. Co., subscription 1911....	1 00
" 13.	To American Toilet Supply Co., laundry.....	3 75
" 13.	To Aquos Distilled Water Co., merchandise.....	1 00
" 13.	To Wm. B. Burford, printing and stationery.....	200 55
" 13.	To Dr. C. A. Carter, expense.....	4 20
" 13.	To Adams Express Co., services.....	2 01
" 13.	To American Express Co., services.....	2 55
" 13.	To United States Express Co., services.....	84
" 13.	To The C. C. Hazer Co., merchandise.....	5 50
" 13.	To Indiana Electrotype Co., merchandise.....	3 00
" 13.	To Multiplex Display Fixture Co., merchandise.....	4 00
" 13.	To R. A. Richards Co., merchandise.....	4 00
" 13.	To W. K. Stewart Co., merchandise.....	4 80
" 13.	To Central Union Telephone Co., rents and tolls....	23 00
" 13.	To Indianapolis Telephone Co., rents and tolls.....	20 35
" 13.	To Western Union Telegraph Co., tolls.....	2 90
" 13.	To Dr. J. N. Hurty, expense.....	70 40
" 13.	To J. L. Anderson, expense.....	18 97
" 13.	To Dr. George T. McCoy, board meeting.....	12 75
" 13.	To Dr. W. N. Wishard, board meeting.....	10 00
" 13.	To Dr. T. Henry Davis, board meeting.....	13 25
" 13.	To Dr. F. A. Tucker, board meeting.....	11 76
" 13.	To R. H. Bryson, postmaster, postage stamps.....	200 00
" 31.	To Dr. C. A. Carter, salary.....	100 00
" 31.	To Mrs. Eva Case, salary.....	50 00
" 31.	To Miss Ethel Hoffman, salary.....	50 00
" 31.	To Miss Louise Lingenfelter, salary.....	50 00
" 31.	To Miss Fannie Stevenson, salary.....	50 00

Jan. 31.	To Miss Miriam Tull, salary.....	\$50 00
Feb. 11.	To Aquos Distilled Water Co., merchandise.....	1 00
" 11.	To W. H. Bass Photo Co., merchandise.....	11 20
" 11.	To Wm. B. Burford, printing and stationery.....	180 21
" 11.	To Miss Ethel Butler, services.....	15 00
" 11.	To Adams Express Co., services.....	4 72
" 11.	To American Express Co., services.....	7 77
" 11.	To United States Express Co., services.....	24
" 11.	To Journal Medical Research, subscription.....	4 00
" 11.	To W. K. Stewart Co., merchandise.....	4 20
" 11.	To Central Union Telephone Co., tolls.....	3 50
" 11.	To Indianapolis Telephone Co., tolls.....	1 30
" 11.	To Western Union Telegraph Co., tolls.....	1 85
" 11.	To J. L. Anderson, expense.....	4 38
" 16.	To Dr. Geo. T. McCoy, board meeting.....	11 75
" 16.	To Dr. W. N. Wishard, board meeting.....	10 00
" 16.	To Dr. T. Henry Davis, board meeting.....	12 75
" 16.	To Dr. Fred A. Tucker, expense and board meeting..	30 45
" 28.	To Dr. C. A. Carter, salary.....	100 00
" 28.	To Mrs. Eva Case, salary.....	50 00
" 28.	To Miss Ethel Hoffman, salary.....	50 00
" 28.	To Miss Louise Lingenfelter, salary.....	50 00
" 28.	To Miss Fannie Stevenson, salary.....	50 00
" 28.	To Miss Miriam I. Tull, salary.....	50 00
Mch. 10.	To J. L. Anderson, expense.....	5 13
" 10.	To Aquos Distilled Water Co., merchandise.....	1 50
" 10.	To Wm. B. Burford, printing and stationery.....	353 18
" 10.	To Charities Publication Committee, books.....	2 50
" 10.	To Indianapolis Calcium Light Co., services.....	12 20
" 10.	To Adams Express Co., services.....	3 14
" 10.	To American Express Co., services.....	3 18
" 10.	To United States Express Co., services.....	5 72
" 10.	To Leo Lando, merchandise.....	2 75
" 10.	To C. P. Lesh Paper Co., merchandise.....	104 04
" 10.	To Central Union Telephone Co., tolls.....	3 30
" 10.	To Indianapolis Telephone Co., tolls.....	5 00
" 10.	To The United Press News Assn. Co., clippings.....	5 00
" 13.	To Miss A. L. Kendall, services.....	31 00
" 13.	To Miss Sadye Slutzke, services.....	28 00
" 13.	To C. R. Anderson, services.....	15 00
" 31.	To Dr. C. A. Carter, salary.....	100 00
" 31.	To Mrs. Eva Case, salary.....	50 00
" 31.	To Miss Ethel Hoffman, salary.....	50 00
" 31.	To Miss Louise Lingenfelter, salary.....	50 00
" 31.	To Miss Fannie Stevenson, salary.....	50 00
" 31.	To Miss Miriam I. Tull, salary.....	50 00
Total second quarter.....		\$2,625 63

Apr.	7.	To J. L. Anderson, expense.....	\$20 03
"	7.	To American Toilet Supply Co., laundry.....	3 75
"	7.	To American Medical Association, reprints.....	5 00
"	7.	To Wm. B. Burford, printing and stationery.....	121 11
"	7.	To J. O. Commack, photos.....	9 00
"	7.	To Dr. C. A. Carter, expense.....	1 00
"	7.	To Central States Clipping Bureau, services.....	5 00
"	7.	To Educational Exhibition Co., merchandise.....	87 25
"	7.	To Adams Express Co., services.....	15 35
"	7.	To American Express Co., services.....	22 80
"	7.	To United States Express Co., services.....	10 22
"	7.	To Fertig & Keevers, charts.....	25 00
"	7.	To Dr. J. N. Hurty, expense.....	56 60
"	7.	To Indiana Electrotpe Co., merchandise.....	6 00
"	7.	To Fletcher M. Noe, repairs.....	3 50
"	7.	To The Sanborn Electric Co., merchandise.....	6 00
"	7.	To Sander & Recker Furniture Co., desk.....	67 50
"	7.	To Central Union Telephone Co., rent and tolls.....	24 12
"	7.	To Indianapolis Telephone Co., rent and tolls.....	26 91
"	7.	To Western Union Telegraph Co., tolls.....	4 82
"	7.	To G. E. Steckert & Co., books.....	22 05
"	7.	To Railroad Transfer Co., freight and drayage.....	4 43
"	7.	To Dr. Geo. T. McCoy, board meeting.....	12 75
"	7.	To Dr. Wm. N. Wishard, board meeting.....	10 00
"	7.	To Dr. T. Henry Davis, board meeting.....	13 25
"	7.	To Dr. Fred A. Tucker, board meeting.....	11 96
"	10.	To R. H. Bryson, postmaster, postage stamps.....	200 00
"	30.	To Dr. C. A. Carter, salary.....	100 00
"	30.	To Mrs. Eva Case, salary.....	50 00
"	30.	To Miss Ethel Hoffman, salary.....	50 00
"	30.	To Miss Louise Lingenfelter, salary.....	50 00
"	30.	To Miss Fannie Stevenson, salary.....	50 00
"	30.	To Miss Miriam I. Tull, salary.....	50 00
May	5.	To Aquos Distilled Water Co., merchandise.....	2 50
"	5.	To Wm. B. Burford, printing and stationery.....	356 07
"	5.	To Central States Clipping Bureau, clippings.....	5 00
"	5.	To Adams Express Co., services.....	10 75
"	5.	To American Express Co., services.....	20 37
"	5.	To United States Express Co., services.....	1 91
"	5.	To Railroad Transfer Co., freight and drayage.....	1 78
"	5.	To Indianapolis Tent and Awning Co., awning.....	5 00
"	5.	To G. E. Stechert & Co., books.....	71
"	5.	To Central Union Telephone Co., tolls.....	3 10
"	5.	To Indianapolis Telephone Co., tolls.....	1 60
"	5.	To Western Union Telegraph Co., tolls.....	1 61
"	5.	To J. L. Anderson, expense.....	3 26
"	5.	To Dr. Wm. N. Wishard, board meeting.....	10 00
"	5.	To Dr. Fred A. Tucker, board meeting.....	10 96
"	5.	To Dr. T. Henry Davis, board meeting.....	13 25

May	5.	To Dr. Geo. T. McCoy, board meeting.....	\$12 50
"	12.	To Dr. Wm. N. Wishard, H. O. conference.....	10 00
"	12.	To Dr. Fred A. Tucker, H. O. conference.....	25 37
"	12.	To Dr. Geo. T. McCoy, H. O. conference.....	22 70
"	12.	To Dr. T. Henry Davis, H. O. conference.....	12 75
"	12.	To Dr. Ludvig Hektoen, services.....	25 00
"	12.	To Dr. J. D. Foor, services.....	15 00
"	12.	To Prof. Severance Burrage, services.....	15 00
"	12.	To Prof. R. L. Sackett, services.....	10 00
"	12.	To Dr. Henry R. Alburger, services.....	15 00
"	12.	To Dr. W. D. Hoskins, services.....	10 00
"	12.	To The Calypool Hotel, four lunches.....	3 40
"	31.	To Dr. C. A. Carter, salary.....	100 00
"	31.	To Mrs. Eva Case, salary.....	50 00
"	31.	To Miss Ethel Hoffman, salary.....	50 00
"	31.	To Miss Louise Lingenfelter, salary.....	50 00
"	31.	To Miss Fannie Stevenson, salary.....	50 00
"	31.	To Miss Miriam I. Tull, salary.....	50 00
June	1.	To Robt. H. Bryson, postage stamps.....	100 00
"	5.	To Aquos Distilled Water Co., merchandise.....	2 50
"	5.	To Wm. B. Burford, merchandise.....	383 37
"	5.	To Central States Clipping Bureau, services.....	5 00
"	5.	To Chicago Transparency Co., merchandise.....	6 80
"	5.	To Adams Express Co., services.....	2 54
"	5.	To American Express Co., services.....	5 59
"	5.	To United States Express Co., services.....	2 22
"	5.	To Indianapolis Calcium Light Co., services.....	12 43
"	5.	To H. Lieber Co., services.....	15 00
"	5.	To Dr. Geo. T. McCoy, railroad fare.....	1 75
"	5.	To Remington Typewriter Co., balance on machine..	47 20
"	5.	To Central Union Telephone Co., toll.....	3 00
"	5.	To Indianapolis Telephone Co., toll.....	7 25
"	5.	To Agent Vandalla R. R. Co., freight.....	7 18
"	5.	To J. L. Anderson, expense.....	7 80
"	5.	To Railroad Transfer Co., freight and drayage.....	4 82
"	5.	To Dennison Mfg. Co., merchandise.....	5 35
"	5.	To Dr. C. A. Carter, salary.....	100 00
"	5.	To Mrs. Eva Case, salary.....	50 00
"	5.	To Miss Ethel Hoffman, salary.....	50 00
"	5.	To Miss Louise Lingenfelter, salary.....	50 00
"	5.	To Miss Fannie Stevenson, salary.....	50 00
"	5.	To Miss Miriam I. Tull, salary.....	50 00
"	5.	To Mrs. Florence Vollrath, salary.....	50 00
"	5.	To W. K. Stewart Co.....	1 75
Total third quarter.....			\$3,141 54
July	1.	To Addressograph Co., merchandise.....	\$2 32
"	1.	To American Toilet Supply Co., laundry.....	3 75
"	1.	To Aquos Distilled Water Co., merchandise.....	1 50

July	1.	To W. H. Bass Photo Co., photos.....	\$47 75
"	1.	To H. E. Bishop, photos.....	15 00
"	1.	To Wm. B. Burford, merchandise.....	3 98
"	1.	To Chicago Transparency Co., slides.....	1 40
"	1.	To Dennison Mfg. Co., merchandise.....	3 81
"	1.	To Adams Express Co., services.....	1 72
"	1.	To American Express Co., services.....	3 38
"	1.	To United States Express Co., services.....	74
"	1.	To E. C. McDonald, photos.....	12 00
"	1.	To Paul A. Mueller, photos.....	14 00
"	1.	To Railroad Transfer Co., freight and drayage.....	5 54
"	1.	To W. K. Stewart Co., books.....	3 50
"	1.	To Smith Premier Typewriting Co., repairs.....	75
"	1.	To Central Union Telephone Co., rent and tolls.....	20 00
"	1.	To Indianapolis Telephone Co., rent and tolls.....	25 40
"	1.	To John L. Upp, photos.....	2 00
"	1.	To Western Union Telegraph Co., tolls.....	2 02
"	1.	To J. L. Anderson, expense.....	5 51
"	28.	To Dr. J. N. Hurty, expense.....	236 80
"	28.	To J. L. Anderson, expense.....	6 40
"	28.	To The Winyah Sanitarium, merchandise.....	10 03
"	28.	To Central States Clipping Bureau, services.....	5 00
"	28.	To Nat. Assn. Study and Prevention of Tuberculosis.....	5 00
"	28.	To W. K. Stewart Co., merchandise.....	50
"	28.	To Dr. T. Henry Davis, board meeting.....	13 25
"	28.	To Dr. Fred A. Tucker, board meeting.....	13 21
"	28.	To Dr. James S. Boyers, board meeting.....	15 30
"	28.	To Dr. John R. Hicks, board meeting.....	12 90
"	31.	To Dr. C. A. Carter, salary.....	100 00
"	31.	To Mrs. Eva Case, salary.....	50 00
"	31.	To Miss Ethel Hoffman, salary.....	50 00
"	31.	To Miss Louise Lingenfelter, salary.....	50 00
"	31.	To Miss Fannie Stevenson, salary.....	50 00
"	31.	To Miss Miriam I. Tull, salary.....	50 00
Aug.	8.	To Aquos Distilled Water Co., merchandise.....	1 50
"	8.	To Wm. B. Burford, merchandise.....	1 80
"	8.	To Adams Express Co., services.....	2 40
"	8.	To American Express Co., services.....	4 20
"	8.	To United States Express Co., services.....	2 20
"	8.	To Central Union Telephone Co., services.....	1 95
"	30.	To Robt. H. Bryson, postmaster, postage stamps....	100 00
"	30.	To Dr. Fred A. Tucker, board meeting.....	7 48
"	30.	To Dr. T. Henry Davis, board meeting.....	8 10
"	30.	To Dr. Jas. S. Boyers, board meeting.....	10 55
"	30.	To Dr. J. R. Hicks, board meeting.....	7 90
"	31.	To Dr. C. A. Carter, salary.....	100 00
"	31.	To Mrs. Eva Case, salary.....	50 00
"	31.	To Miss Ethel Hoffman, salary.....	50 00
"	31.	To Miss Louise Lingenfelter, salary.....	50 00
"	31.	To Miss Fannie Stevenson, salary.....	50 00

Aug. 31.	To Miss Miriam I. Tull, salary.....	\$50 00
Sept. 8.	To Aquos Distilled Water Co., merchandise.....	1 50
" 8.	To Dr. C. A. Carter, expense.....	1 05
" 8.	To Joe A. Downey, postal guide.....	3 50
" 8.	To Adams Express Co., services.....	2 21
" 8.	To American Express Co., services.....	2 66
" 8.	To United States Express Co., services.....	1 13
" 8.	To Smith Premier Typewriting Company, chair.....	8 00
" 8.	To Central Union Telephone Co., tolls.....	6 80
" 8.	To J. L. Anderson, expense.....	12 68
" 14.	To Dr. Fred A. Tucker, board meeting.....	11 86
" 14.	To Dr. T. Henry Davis, board meeting.....	12 75
" 14.	To Dr. Jas. S. Boyers, board meeting.....	15 75
" 14.	To Dr. John R. Hicks, board meeting.....	12 90
" 28.	To American Toilet Supply Co., laundry.....	3 75
" 28.	To Aquos Distilled Water Co., merchandise.....	1 00
" 28.	To Wm. B. Burford, merchandise.....	118 31
" 28.	To Dennison Mfg. Co., merchandise.....	11 80
" 28.	To Adams Express Co., services.....	1 99
" 28.	To American Express Co., services.....	4 45
" 28.	To United States Express Co., services.....	1 35
" 28.	To Indiana Electrotype Co., merchandise.....	1 40
" 28.	To Lea & Febiger, book.....	4 50
" 28.	To Railroad Transfer Co., freight and drayage.....	75
" 28.	To Indianapolis Telephone Co., tolls.....	3 50
" 28.	To Central Union Telephone Co., tolls.....	2 75
" 28.	To Dr. J. N. Hurty, expense.....	21 80
" 28.	To Robt. H. Bryson, postmaster, postage stamps....	80 00
" 30.	To C. A. Carter, salary.....	100 00
" 30.	To Mrs. Eva Case, salary.....	50 00
" 30.	To Miss Ethel Hoffman, salary.....	50 00
" 30.	To Miss Louise Lingenfelter, salary.....	50 00
" 30.	To Miss Fannie Stevenson, salary.....	50 00
" 30.	To Miss Miriam I. Tull, salary.....	50 00

Total fourth quarter..... \$2,042 25

Appropriation \$10,000 00

Expenses, first quarter \$2,183 72

Expenses, second quarter 2,625 63

Expenses, third quarter 3,141 54

Expenses, fourth quarter 2,042 25

Total expense 9,993 14

Balance reverting to general fund..... \$6 86

Secretary's salary (specific)..... \$3,000 00

Chief clerk's salary (specific)..... 1,500 00

INDIANA STATE BOARD OF HEALTH—LABORATORY OF HYGIENE.

Oct.	31.	To Dr. J. P. Simonds, salary.....	\$166 66
"	31.	To Dr. Will Shimer, salary.....	125 00
"	31.	To Dr. Ada Schwietzer, salary.....	125 00
"	31.	To Dr. W. F. King, salary.....	100 00
"	31.	To Miss H. M. Hooker, salary.....	50 00
"	31.	To Robt. P. Johnson, salary.....	75 00
"	31.	To F. R. Bannon, salary.....	25 00
Nov.	4.	To Aquos Distilled Water Co., merchandise.....	2 00
"	4.	To Adams Express Co., services.....	1 40
"	4.	To American Express Co., services.....	6 10
"	4.	To United States Express Co., services.....	1 70
"	4.	To Indianapolis Sanitary Co., services.....	11 25
"	4.	To Indianapolis Tent and Awning Co., services.....	50
"	4.	To Klee & Coleman, merchandise.....	2 50
"	4.	To Chas. E. Marshall, Sec. S. O. A. B., merchandise..	1 50
"	4.	To G. E. Stechert & Co., books.....	10 70
"	4.	To Ward Bros. Drug Co., merchandise.....	5 50
"	4.	To Dr. J. B. Simonds, expense.....	7 30
"	4.	To Dr. Will Shimer, expense.....	10 80
"	4.	To Dr. W. F. King, expense.....	30 77
"	4.	To Hogan Transfer Co., freight and drayage.....	2 98
"	4.	To J. L. Anderson, expense.....	9 55
"	17.	To J. P. Simonds, expense.....	7 45
"	30.	To J. P. Simonds, salary.....	166 67
"	30.	To Will Shimer, salary.....	125 00
"	30.	To Ada Schweitzer, salary.....	125 00
"	30.	To Wm. F. King, salary.....	100 00
"	30.	To Miss H. M. Hooker, salary.....	50 00
"	30.	To Robt. P. Johnson, salary.....	75 00
"	30.	To F. R. Bannon, salary.....	25 00
Dec:	6.	To American Med. Pub. Co., subscriptions, 1911....	1 00
"	6.	To Wm. B. Burford, printing and stationery.....	18 51
"	6.	To Adams Express Co., services.....	48
"	6.	To American Express Co., services.....	1 45
"	6.	To United States Express Co., services.....	1 66
"	6.	To Indianapolis Sanitary Co., services.....	5 00
"	6.	To Dr. W. F. King, expense.....	52 87
"	6.	To L. S. Mauly, merchandise.....	10 00
"	6.	To Dr. J. P. Simonds, expense.....	10 85
"	6.	To Dr. Will Shimer, expense.....	6 05
"	6.	To G. E. Stechert & Co., books.....	3 85
"	6.	To W. K. Stewart Co., books.....	4 95
"	6.	To Weber Drug Co., merchandise.....	65 00
"	6.	To J. L. Anderson, merchandise.....	6 80
"	31.	To Dr. J. P. Simonds, salary.....	166 67
"	31.	To Dr. Will Shimer, salary.....	125 00
"	31.	To Dr. Ada Schweitzer, salary.....	125 00
"	31.	To Dr. W. F. King, salary.....	100 00

Dec. 31.	To Miss H. M. Hooker, salary.....	\$50 00
" 31.	To Robt. P. Johnson, salary.....	75 00
" 31.	To F. R. Bannon, salary.....	25 00
Jan. 13.	To American Toilet Supply Co., laundry.....	23 25
" 13.	To Adams Express Co., services.....	3 00
" 13.	To American Express Co., services.....	3 93
" 13.	To United States Express Co., services.....	86
" 13.	To The Francis Pharmacy Co., merchandise.....	8 30
" 13.	To Joseph Gardner, wire cages and labor.....	27 85
" 13.	To Hogan Transfer Co., freight and drayage.....	99
" 13.	To Dr. W. F. King, expense.....	55 58
" 13.	To E. H. Sargent & Co., merchandise.....	2 55
" 13.	To G. E. Stechert & Co., book.....	1 60
" 13.	To Ward Bros. Drug Co., merchandise.....	50 00
" 13.	To Dr. J. P. Simonds, expense.....	3 85
" 13.	To J. L. Anderson, expense.....	10 80
" 13.	To Aquos Distilled Water Co., merchandise.....	1 00
" 13.	To Ward Bros. Drug Co., merchandise.....	55
Total first quarter.....		\$2,494 58
Jan. 31.	To Dr. J. P. Simonds, salary.....	\$166 67
" 31.	To Dr. Will Shimer, salary.....	125 00
" 31.	To Dr. Ada Schweitzer, salary.....	125 00
" 31.	To Dr. W. F. King, salary.....	100 00
" 31.	To Miss H. M. Hooker, salary.....	50 00
" 31.	To Robt. P. Johnson, salary.....	75 00
" 31.	To F. R. Bannon, salary.....	25 00
Feb. 11.	To American Medical Assn., reprints.....	10 50
" 11.	To J. L. Anderson, expense.....	9 75
" 11.	To Bausch & Lomb Optical Co., merchandise.....	8 73
" 11.	To Wm. B. Burford, merchandise.....	139 29
" 11.	To Adams Express Co., services.....	2 70
" 11.	To American Express Co., services.....	1 95
" 11.	To United States Express Co., services.....	60
" 11.	To The Fulton Evans Co., merchandise.....	90
" 11.	To Interstate Medical Journal, subscriptions.....	7 00
" 11.	To Dr. W. F. King, expense.....	44 10
" 11.	To Dr. Will Shimer, expense.....	1 90
" 11.	To G. E. Stechert & Co., books.....	23 00
" 11.	To Ward Bros. Drug Co., merchandise.....	3 35
" 28.	To Dr. J. P. Simonds, salary.....	166 66
" 28.	To Dr. Will Shimer, salary.....	125 00
" 28.	To Dr. Ada Schweitzer, salary.....	125 00
" 28.	To Dr. W. F. King, salary.....	100 00
" 28.	To Miss H. M. Hooker, salary.....	50 00
" 28.	To Robt. P. Johnson, salary.....	75 00
" 28.	To F. R. Bannon, salary.....	25 00
Mar. 10.	To Wm. B. Burford, printing and stationery.....	61 57
" 10.	To Adams Express Co., services.....	2 35
" 10.	To American Express Co., services.....	30

Mar. 10.	To United States Express Co., services.....	\$0 90
" 10.	To Mrs. W. M. Herriott & Son, merchandise.....	6 00
" 10.	To Dr. W. F. King, expense.....	86 61
" 10.	To Dr. Ada Schweitzer, expense.....	3 75
" 10.	To J. L. Anderson, expense.....	10 10
" 31.	To Dr. J. P. Simonds, salary.....	166 67
" 31.	To Will Shimer, salary.....	125 00
" 31.	To Dr. Ada Schweitzer, salary.....	125 00
" 31.	To Dr. W. F. King, salary.....	100 00
" 31.	To Miss H. M. Hooker, salary.....	50 00
" 31.	To Robt. P. Johnson, salary.....	75 00
" 31.	To F. R. Bannon, salary.....	25 00
Apr. 1.	To American Toilet Supply Co., laundry.....	23 10
" 1.	To American Antiformin Co., merchandise.....	3 00
" 1.	To Adams Express Co., service.....	3 65
" 1.	To American Express Co., service.....	2 35
" 1.	To United States Express Co., service.....	1 18
" 1.	To Francis Pharmacy Co., merchandise.....	60
" 1.	To Hoover-Watson Printing Co., reprints.....	9 00
" 1.	To The John Hopkins Press, subscription.....	2 00
" 1.	To Dr. W. F. King, expense.....	53 25
" 1.	To Dr. J. P. Simonds, expense.....	4 20
" 1.	To G. E. Stechert & Co., books.....	5 95
" 1.	To W. K. Stewart Co., books.....	1 10
" 1.	To Ward Bros. Drug Co., merchandise.....	5 04
" 1.	To J. L. Anderson, expense.....	10 16
Total second quarter.....		\$2,549 93
Apr. 30.	To Dr. W. F. King, salary.....	\$166 66
" 30.	To Dr. J. P. Simonds, salary.....	166 67
" 30.	To Will Shimer, salary.....	125 00
" 30.	To Dr. Ada Schweitzer, salary.....	125 00
" 30.	To Miss H. M. Hooker, salary.....	50 00
" 30.	To Robt. P. Johnson, salary.....	75 00
" 30.	To F. R. Bannon, salary.....	25 00
May 5.	To American Medical Assn., reprints.....	4 50
" 5.	To Aquos Distilled Water Co., merchandise.....	5 00
" 5.	To Bausch & Lomb Optical Co., merchandise.....	3 45
" 5.	To Wm. B. Burford, printing and stationery.....	59 20
" 5.	To Adams Express Co., services.....	3 78
" 5.	To American Express Co., services.....	1 45
" 5.	To United States Express Co., services.....	3 06
" 5.	To Indianapolis Tent and Awning Co., 2 awnings....	9 00
" 5.	To Pettis Dry Goods Co., merchandise.....	3 75
" 5.	To E. H. Sargent & Co., merchandise.....	21 24
" 5.	To G. E. Stechert & Co., journals.....	9 25
" 5.	To J. P. Simonds, expense.....	30 35
" 5.	To J. L. Anderson, expense.....	7 60
" 5.	To Dr. J. P. Simonds, expense.....	5 70

May	22.	To R. H. Bryson, postmaster, postage stamps.....	\$100 00
"	27.	To Dr. J. P. Simonds, expense.....	14 10
"	27.	To Dr. Will Shimer, expense.....	4 65
"	31.	To Dr. J. P. Simonds, salary.....	166 66
"	31.	To Dr. Will Shimer, salary.....	125 00
"	31.	To Dr. Ada Schweitzer, salary.....	125 00
"	31.	To Miss H. M. Hooker, salary.....	50 00
"	31.	To Mr. Robt. P. Johnson, salary.....	75 00
"	31.	To F. R. Bannon, salary.....	25 00
June	5.	To Wm. B. Burford, merchandise.....	20 92
"	5.	To Adams Express Co., services.....	14 68
"	5.	To American Express Co., services.....	1 25
"	5.	To United States Express Co., services.....	1 00
"	5.	To The Francis Pharmacy Co., merchandise.....	1 80
"	5.	To Indianapolis Sanitary Co., services.....	7 50
"	5.	To Lilly & Stalnaker, merchandise.....	12 13
"	5.	To Vonnegut Hardware Co., merchandise.....	2 55
"	5.	To Ward Bros. Drug Co., merchandise.....	41 50
"	5.	To Weber Drug Co., merchandise.....	10 00
"	5.	To William Wood & Co., book.....	6 00
"	5.	To Dr. J. P. Simonds, expense.....	16 40
"	5.	To J. L. Anderson, expense.....	10 25
"	5.	To Dr. A. W. Brayton, services.....	28 00
"	10.	To Dr. J. P. Simonds, expense.....	22 75
"	19.	To Dr. Ada Schweitzer, part of salary.....	65 00
"	30.	To Dr. J. P. Simonds, salary.....	166 67
"	30.	To Dr. Will Shimer, salary.....	125 00
"	30.	To Dr. Ada Schweitzer, part of salary.....	60 00
"	30.	To Miss H. M. Hooker, salary.....	50 00
"	30.	To Robt. P. Johnson, salary.....	75 00
"	30.	To F. R. Bannon, salary.....	25 00
July	1.	To American Antiformin Co., merchandise.....	3 00
"	1.	To American Medical Assn., reprints.....	5 00
"	1.	To American Toilet Supply Co., laundry.....	21 65
"	1.	To Aquos Distilled Water Co., merchandise.....	3 00
"	1.	To Bausch & Lomb Optical Co., merchandise.....	33
"	1.	To Wm. B. Burford, merchandise.....	4 09
"	1.	To Francis Pharmacy Co., merchandise.....	1 80
"	1.	To Adams Express Co., services.....	2 70
"	1.	To American Express Co., services.....	3 55
"	1.	To Indianapolis Sanitary Co., services.....	12 00
"	1.	To Geo. J. Mayer, merchandise.....	90
"	1.	To Pettis Dry Goods Co., merchandise.....	90
"	1.	To Railroad Transfer Co., freight and drayage.....	50
"	1.	To G. E. Stechert & Co., books.....	3 10
"	1.	To Ward Bros. Drug Co., merchandise.....	4 80
"	1.	To Whitall Tatum Co., merchandise.....	105 75
"	1.	To Dr. J. P. Simonds, expense.....	3 70
"	1.	To J. L. Anderson, expense.....	20 82

Total third quarter..... \$2,547 08

July 28.	To J. L. Anderson, expense.....	\$8 18
" 28.	To Dr. J. P. Simonds, expense.....	2 45
" 28.	To Aquos Distilled Water Co., merchandise.....	2 50
" 28.	To G. E. Stechert & Co., journal.....	3 75
" 28.	To Ward Bros. Drug Co., merchandise.....	5 18
" 28.	To Francis Pharmacy Co., merchandise.....	35
" 31.	To Dr. J. P. Simonds, salary.....	166 67
" 31.	To Dr. Will Shimer, salary.....	125 00
" 31.	To Dr. Ada E. Schweitzer, salary.....	125 00
" 31.	To Miss H. M. Hooker, salary.....	50 00
" 31.	To Miss Clara Belle Moore, salary.....	40 00
" 31.	To Robt. P. Johnson, salary.....	75 00
Aug. 8.	To Ben Wade, janitor.....	11 00
" 8.	To Dr. J. P. Simonds, expense.....	7 70
" 8.	To Aquos Distilled Water Co., merchandise.....	2 00
" 8.	To Adams Express Co., services.....	1 20
" 8.	To Johns Hopkins Press, bulletins.....	75
" 8.	To Indianapolis Sanitary Co., services.....	13 50
" 8.	To International Instrument Co., merchandise.....	150 75
" 8.	To Pettis Dry Goods Co., merchandise.....	1 50
" 8.	To E. H. Sargent & Co., merchandise.....	60
" 8.	To Weber Drug Co., serum.....	10 00
" 15,	To Ben Wade, work.....	11 00
" 21.	To Ben Wade, work.....	10 00
" 28.	To Cecile McHolme, stenog. services.....	10 00
" 31.	To Dr. J. P. Simonds, salary.....	166 66
" 31.	To Dr. Will Shimer, salary.....	125 00
" 31.	To Dr. Ada Schweitzer, salary.....	125 00
" 31.	To Miss H. M. Hooker, salary.....	50 00
" 31.	To Miss Clarabelle Moore, salary.....	40 00
" 31.	To Robt. P. Johnson, salary.....	75 00
Sept. 5.	To Miss Edith Barton, salary.....	10 00
" 8.	To American Antiformin Co., merchandise.....	3 83
" 8.	To Aquos Distilled Water Co., merchandise.....	2 50
" 8.	To American Express Co., service.....	5 50
" 8.	To Adams Express Co., service.....	3 23
" 8.	To Henry Hell Chemical Co., merchandise.....	1 01
" 8.	To Indianapolis Sanitary Co., service.....	13 50
" 8.	To Weber Drug Co., merchandise.....	25 00
" 8.	To Dr. Will Shimer, expense.....	1 40
" 8.	To J. L. Anderson, expense.....	12 17
" 8.	To International Instrument Co., merchandise.....	111 30
" 28.	To American Toilet Supply Co., laundry.....	21 45
" 28.	To Aquos Distilled Water Co., merchandise.....	2 00
" 28.	To Bausch & Lomb Optical Co., merchandise.....	24 37
" 28.	To Dennison Mfg. Co., merchandise.....	19 00
" 28.	To Adams Express Co., service.....	55
" 28.	To American Express Co., service.....	35
" 28.	To Francis Pharmacy Co., merchandise.....	85
" 28.	To Hampton Printing Co., merchandise.....	22 00
" 28.	To Indianapolis Blue Print and Supply Co., mdse...	1 20

Sept. 28.	To Indianapolis Sanitary Co., service.....	\$18 50
" 28.	To Journal Medical Research, subscriptions 1911....	4 00
" 28.	To G. E. Stechert & Co., books.....	38 00
" 28.	To Weber Drug Co., merchandise.....	25 00
" 28.	To Ward Bros. Drug Co., merchandise.....	6 32
" 28.	To Dr. J. P. Simonds, expense.....	5 85
" 28.	To J. L. Anderson, expense.....	9 65
" 30.	To Dr. J. P. Simonds, salary.....	166 67
" 30.	To Dr. Will Shimer, salary.....	125 00
" 30.	To Dr. Ada E. Schweitzer, salary.....	125 00
" 30.	To Miss H. M. Hooker, salary.....	50 00
" 30.	To Mr. Robt. P. Johnson, salary.....	75 00
" 30.	To C. L. Bartlett, salary.....	10 00
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Total, fourth quarter.....		\$2,350 92
Appropriation		\$10,000 00
Total for first quarter		\$2,494 58
Total for second quarter		2,549 93
Total for third quarter		2,547 06
Total for fourth quarter		2,350 92
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		9,942 49
Amount reverting to general fund.....		\$57 51

INDIANA STATE BOARD OF HEALTH—LABORATORY OF PURE FOOD AND DRUGS.

For Fiscal Year, October 1, 1910, to September 30, 1911.

1910.		
Oct. 10.	To H. E. Bishop, expense.....	\$22 45
" 31.	To H. E. Barnard, salary.....	208 33
" 31.	To H. E. Bishop, salary.....	125 00
" 31.	To I. L. Miller, salary.....	116 67
" 31.	To Edith Hoffman, salary.....	50 00
" 31.	To A. W. Bruner, salary.....	100 00
" 31.	To B. W. Cohn, salary.....	100 00
" 31.	To F. W. Tucker, salary.....	100 00
" 31.	To John Owens, salary.....	100 00
Nov. 4.	To H. E. Barnard, expense.....	29 30
" 4.	To A. W. Bruner, expense.....	67 40
" 4.	To B. W. Cohn, expense.....	11 58
" 4.	To F. W. Tucker, expense.....	67 00
" 4.	To John Owens, expense.....	68 86
" 23.	To H. E. Barnard, expense.....	8 05
" 30.	To H. E. Barnard, salary.....	208 34
" 30.	To H. E. Bishop, salary.....	125 00
" 30.	To I. L. Miller, salary.....	116 66
" 30.	To Edith Hoffman, salary.....	50 00
" 30.	To A. W. Bruner, salary.....	100 00
" 30.	To B. W. Cohn, salary.....	100 00

Nov. 30.	To F. W. Tucker, salary.....	\$100 00
" 30.	To John Owens, salary.....	100 00
Dec. 6.	To H. E. Barnard, expense.....	83 30
" 6.	To A. W. Bruner, expense.....	57 70
" 6.	To B. W. Cohn, expense.....	18 95
" 6.	To F. W. Tucker, expense.....	75 90
" 6.	To John Owens, expense.....	77 11
" 6.	To Wm. B. Burford, printing and stationery.....	1 36
" 6.	To The Chemical Engineer, subscriptions 1911.....	2 00
" 6.	To The Druggists Circular, subscriptions 1911.....	2 00
" 6.	To Adams Express Co., service.....	6 46
" 6.	To United States Express Co., service.....	2 60
" 31.	To H. E. Barnard, salary.....	208 33
" 31.	To H. E. Bishop, salary.....	125 00
" 31.	To I. L. Miller, salary.....	118 67
" 31.	To Edith Hoffman, salary.....	50 00
" 31.	To A. W. Bruner, salary.....	100 00
" 31.	To B. W. Cohn, salary.....	100 00
" 31.	To F. W. Tucker, salary.....	100 00
" 31.	To John Owens, salary.....	100 00
" 31.	To A. W. Bruner, expense.....	45 25
" 31.	To B. W. Cohn, expense.....	6 31
" 31.	To F. W. Tucker, expense.....	75 58
" 31.	To John Owens, expense.....	57 91

Total, first quarter \$3,485 07

1911.

Jan. 13.	To H. E. Barnard, expense.....	\$25 08
" 13.	To Wm. B. Burford, printing and stationery.....	63 09
" 13.	To American Toilet Supply Co., laundry.....	3 75
" 13.	To Adams Express Co., service.....	3 75
" 13.	To G. M. Merrick, T. W. repairs.....	3 50
" 13.	To E. H. Sargent & Co., merchandise.....	90
" 13.	To The Standard Calorimeter Co., merchandise.....	6 50
" 13.	To Vonnegut Hardware Co., merchandise.....	1 08
" 31.	To H. E. Barnard, salary.....	208 33
" 31.	To H. E. Bishop, salary.....	125 00
" 31.	To I. L. Miller, salary.....	118 67
" 31.	To Edith Hoffman, salary.....	50 00
" 31.	To A. W. Bruner, salary.....	100 00
" 31.	To B. W. Cohn, salary.....	100 00
" 31.	To F. W. Tucker, salary.....	100 00
" 31.	To John Owens, salary.....	100 00
" 31.	To A. W. Bruner, expense.....	62 95
" 31.	To B. W. Cohn, expense.....	4 20
" 31.	To F. W. Tucker, expense.....	56 60
" 31.	To John Owens, expense.....	55 84
Feb. 11.	To Wm. B. Burford, merchandise.....	32 21
" 11.	To Adams Express Co., services.....	3 00
" 11.	To The H. Lieber, merchandise.....	3 93

Feb. 11.	To Pitman-Myers Co., merchandise.....	\$14 68
" 11.	To E. H. Sargent & Co., merchandise.....	25 00
" 11.	To Schnull & Co., merchandise.....	4 50
" 11.	To G. E. Stechert & Co., books.....	18 85
" 28.	To H. E. Barnard, salary.....	208 34
" 28.	To H. E. Bishop, salary.....	125 00
" 28.	To I. L. Miller, salary.....	116 66
" 28.	To Edith Hoffman, salary.....	50 00
" 28.	To A. W. Bruner, salary.....	100 00
" 28.	To B. W. Cohn, salary.....	100 00
" 28.	To F. W. Tucker, salary.....	100 00
" 28.	To John Owens, salary.....	100 00
Mar. 4.	To A. W. Bruner, expense.....	60 35
" 4.	To B. W. Cohn, expense.....	6 19
" 4.	To F. W. Tucker, expense.....	69 03
" 4.	To John Owens, expense.....	51 35
" 4.	To H. E. Barnard, expense.....	23 28
" 31.	To H. E. Barnard, salary.....	208 33
" 31.	To H. E. Bishop, salary.....	125 00
" 31.	To I. L. Miller, salary.....	116 67
" 31.	To Edith Hoffman, salary.....	50 00
" 31.	To A. W. Bruner, salary.....	100 00
" 31.	To B. W. Cohn, salary.....	100 00
" 31.	To F. W. Tucker, salary.....	100 00
" 31.	To John Owens, salary.....	100 00

Total, second quarter \$3,299 61

1911.

Apr. 1.	To H. E. Barnard, expense.....	\$43 63
" 1.	To A. W. Bruner, expense.....	57 75
" 1.	To F. W. Tucker, expense.....	85 33
" 1.	To John Owens, expense.....	80 50
" 1.	To Adams Express Co., services.....	2 55
" 1.	To American Express Co., services.....	1 05
" 1.	To United States Express Co., services.....	50
" 1.	To American Toilet Supply Co., laundry.....	16 20
" 1.	To The H. Lieber Co., merchandise.....	4 13
" 1.	To W. K. Stewart Co., merchandise.....	16 60
" 30.	To H. E. Barnard, salary.....	208 33
" 30.	To H. E. Bishop, salary.....	125 00
" 30.	To I. L. Miller, salary.....	116 67
" 30.	To Edith Hoffman, salary.....	50 00
" 30.	To A. W. Bruner, salary.....	100 00
" 30.	To B. W. Cohn, salary.....	100 00
" 30.	To F. W. Tucker, salary.....	100 00
" 30.	To John Owens, salary.....	100 00
" 30.	To A. W. Bruner, expense.....	53 15
" 30.	To B. W. Cohn, expense.....	63 53
" 30.	To F. W. Tucker, expense.....	76 34
" 30.	To John Owens, expense.....	66 89

May 31.	To H. E. Barnard, salary.....	\$208 34
" 31.	To H. E. Bishop, salary.....	125 00
" 31.	To I. L. Miller, salary.....	116 66
" 31.	To Edith Hoffman, salary.....	50 00
" 31.	To A. W. Bruner, salary.....	100 00
" 31.	To B. W. Cohn, salary.....	100 00
" 31.	To F. W. Tucker, salary.....	100 00
" 31.	To John Owens, salary.....	100 00
" 31.	To A. W. Bruner, expense.....	68 83
" 31.	To B. W. Cohn, expense.....	41 44
" 31.	To F. W. Tucker, expense.....	74 14
" 31.	To John Owens, expense.....	60 85
" 31.	To H. E. Barnard, expense.....	18 10
" 31.	To Arnold Reporting Co., circular letters.....	2 60
" 31.	To Wm. B. Burford, merchandise.....	22 17
" 31.	To Adams Express Co., services.....	1 20
" 31.	To American Express Co., services.....	2 65
" 31.	To United States Express Co., services.....	35
June 30.	To H. E. Barnard, salary.....	208 33
" 30.	To H. E. Bishop, salary.....	125 00
" 30.	To I. L. Miller, salary.....	116 67
" 30.	To Edith Hoffman, salary.....	50 00
" 30.	To A. W. Bruner, salary.....	100 00
" 30.	To B. W. Cohn, salary.....	100 00
" 30.	To F. W. Tucker, salary.....	100 00
" 30.	To John Owens, salary.....	100 00
" 30.	To John T. Willett, salary.....	83 34
Total third quarter.....		\$3,643 85

1911.

July 1.	To H. E. Barnard, expense.....	\$17 46
" 1.	To A. W. Bruner, expense.....	74 90
" 1.	To B. W. Cohn, expense.....	25 45
" 1.	To F. W. Tucker, expense.....	76 95
" 1.	To John Owens, expense.....	92 67
" 1.	To John T. Willett, expense.....	31 42
" 1.	To American Toilet Supply Co., laundry.....	8 55
" 1.	To Arnold Reporting Co., circular letter.....	6 05
" 1.	To Adams Express Co., services.....	2 10
" 1.	To Fertig & Keever, painting.....	203 00
" 1.	To L. E. Morrison & Co.....	10 50
" 26.	To Robt. H. Bryson, postmaster, postage stamps.....	100 00
" 28.	To Blanke & Hauk Co., merchandise.....	8 00
" 28.	To Pittman-Myers Co., merchandise.....	29 79
" 28.	To F. P. Smith Co., merchandise.....	20
" 31.	To H. E. Barnard, salary.....	208 33
" 31.	To H. E. Bishop, salary.....	125 00
" 31.	To I. L. Miller, salary.....	116 67
" 31.	To Edith Hoffman, salary.....	50 00
" 31.	To A. W. Bruner, salary.....	100 00

July 31.	To B. W. Cohn, salary.....	\$100 00
" 31.	To F. W. Tucker, salary.....	100 00
" 31.	To John Owens, salary.....	100 00
" 31.	To John T. Willett, salary.....	83 33
Aug. 8.	To H. E. Barnard, expense.....	3 60
" 8.	To A. W. Bruner, expense.....	79 00
" 8.	To B. W. Cohn, expense.....	27 33
" 8.	To F. W. Tucker, expense.....	39 65
" 8.	To John Owens, expense.....	98 48
" 8.	To John T. Willett, expense.....	49 52
" 8.	To Railroad Transfer Co., freight and drayage.....	4 33
" 8.	To Wm. B. Burford, printing and stationery.....	121 71
" 8.	To Adams Express Co., service.....	1 15
" 8.	To American Express Co., service.....	5 95
" 8.	To United States Express Co., service.....	1 50
" 31.	To H. E. Barnard, salary.....	208 34
" 31.	To H. E. Bishop, salary.....	125 00
" 31.	To I. L. Miller, salary.....	125 00
" 31.	To Edith Hoffman, salary.....	50 00
" 31.	To A. W. Bruner, salary.....	100 00
" 31.	To B. W. Cohn, salary.....	100 00
" 31.	To F. W. Tucker, salary.....	100 00
" 31.	To John Owens, salary.....	100 00
" 31.	To John T. Willett, salary.....	83 33
" 31.	To J. C. Diggs, salary.....	75 00
Sept. 1.	To H. E. Barnard, expense.....	66 15
" 8.	To A. W. Bruner, expense.....	69 20
" 8.	To B. W. Cohn, expense.....	47 68
" 8.	To F. W. Tucker, expense.....	82 79
" 8.	To John Owens, expense.....	65 68
" 8.	To John T. Willett, expense.....	64 44
" 8.	To H. E. Bishop, expense.....	10 76
" 8.	To The Albert Gall Co., repairs.....	2 50
" 8.	To Wm. Gierke, bookbinding.....	80 15
" 8.	To The H. Lieber Co., merchandise.....	1 50
" 8.	To L. E. Morrison & Co., merchandise.....	12 50
" 8.	To Pittman-Myers Co., merchandise.....	114 29
" 8.	To L. Strauss & Co., laboratory coats.....	22 75
" 8.	To Railroad Transfer Co., freight and drayage.....	4 46
" 8.	To Indianapolis Telephone Co., tolls.....	4 85
" 8.	To Western Union Telegraph Co., tolls.....	6 45
" 8.	To Adams Express Co., services.....	4 75
" 28.	To American Toilet Supply Co., laundry.....	3 75
" 28.	To Arnold Reporting Co.....	8 90
" 28.	To Wm. B. Burford, merchandise.....	45 00
" 30.	To H. E. Barnard, salary.....	208 33
" 30.	To H. E. Bishop, salary.....	125 00
" 30.	To I. L. Miller, salary.....	125 00
" 30.	To Edith Hoffman, salary.....	50 00
" 30.	To John T. Willett, salary.....	83 34

Sept. 30.	To J. C. Diggs, salary.....	\$75 00
" 30.	To J. J. Hinman (from water laboratory, June 15th), salary	15 00
	Total fourth quarter.....	\$4,569 48

RECAPITULATION.

Appropriation	\$15,000 00
Expense first quarter.....	\$3,485 07
Expense second quarter.....	3,299 61
Expense third quarter.....	3,643 85
Expense fourth quarter.....	4,569 48
Total	14,998 01
Balance	\$1 99
Credit by refund, Pittman-Myers Co.....	22 61
Total reverting to general fund.....	\$24 60

INDIANA STATE BOARD OF HEALTH—WATER LABORATORY.

Oct. 31.	To J. H. Brewster, salary.....	\$116 67
" 31.	To Goldine Grove, salary.....	50 00
" 31.	To J. J. Hinman, Jr., salary.....	30 00
" 31.	To Cullen Thomas, salary.....	30 00
" 31.	To Phillip Brodus, salary.....	50 00
Nov. 4.	To J. H. Brewster, expense.....	14 75
" 4.	To Engineering Record, subscriptions 1911.....	3 00
" 4.	To Adams Express Co., services.....	4 07
" 4.	To American Express Co.....	95
" 4.	To Hogan Transfer Co., freight and drayage.....	1 08
" 4.	To Daniel Stewart Co., merchandise.....	3 25
" 4.	To J. L. Anderson, expense.....	2 70
" 16.	To J. H. Brewster, expense.....	8 90
" 30.	To Goldine Grove, salary	50 00
" 30.	To J. H. Brewster, salary.....	116 66
" 30.	To J. J. Hinman, Jr., salary.....	30 00
" 30.	To Cullen Thomas, salary.....	30 00
" 30.	To Phillip Brodus, salary.....	50 00
Dec. 6.	To J. H. Brewster, expense.....	18 55
" 6.	To Wm. B. Burford, printing and stationery.....	55 78
" 6.	To Adams Express Co., services.....	6 25
" 6.	To American Express Co., services.....	6 15
" 19.	To H. E. Barnard, expense	38 95
" 31.	To J. H. Brewster, salary.....	116 67
" 31.	To Goldine Grove, salary	50 00
" 31.	To J. J. Hinman, Jr., salary.....	30 00
" 31.	To Cullen Thomas, salary	30 00
" 31.	To Phillip Brodus, salary	50 00

Jan. 13.	To American Toilet Supply Co., laundry.....	\$12 90
" 13.	To Wm. B. Burford, printing and stationery.....	5 40
" 13.	To American Express Co., services.....	4 18
" 13.	To United States Express Co., services.....	2 40
" 13.	To Indianapolis Blue Print Co., merchandise.....	70
" 13.	To The H. Lieber Co., merchandise.....	8 60

Total first quarter..... \$1,028 56

Jun. 31.	To J. H. Brewster, salary.....	\$116 67
" 31.	To Goldine Grove, salary	50 00
" 31.	To J. J. Hinman, Jr., salary.....	30 00
" 31.	To Cullen Thomas, salary	30 00
" 31.	To Philip Brodus, salary.....	50 00
Feb. 11.	To American Express Co., services.....	3 35
" 11.	To United States Express Co., services.....	1 13
" 28.	To Goldine Grove, salary	50 00
" 28.	To J. J. Hinman, Jr., salary.....	30 00
" 28.	To Cullen Thomas, salary.....	30 00
" 28.	To Philip Brodus, salary.....	50 00
Mar. 3.	To Robt. H. Bryson, P. M., postage stamps.....	125 00
" 10.	To Wm. B. Burford, stationery.....	29 20
" 10.	To Adams Express Co., services.....	2 45
" 10.	To American Express Co., services.....	3 80
" 31.	To Goldine Grove, salary	50 00
" 31.	To J. J. Hinman, salary	30 00
" 31.	To Cullen Thomas, salary.....	30 00
" 31.	To Philip Brodus, salary	50 00

Total second quarter \$761 60

Apr. 30.	To Goldine Grove, salary	\$32 00
" 30.	To J. J. Hinman, Jr., salary.....	30 00
" 30.	To Cullen Thomas, salary.....	30 00
" 30.	To Philip Brodus, salary	50 00
" 30.	To Alline Grove, salary	12 00
May 5.	To Brannum-Keene Lumber Co., merchandise.....	2 00
" 30.	To Wm. B. Burford, printing and stationery.....	31 08
" 5.	To The Commercial Distilling Co., 1 bbl. alcohol....	23 21
" 5.	To Adams Express Co., services.....	3 59
" 5.	To American Express Co., services.....	2 72
" 5.	To United States Express Co., services.....	35
" 5.	To G. M. Merrick, agt., merchandise.....	3 50
" 5.	To W. K. Stewart Co., merchandise.....	2 10
" 5.	To H. E. Barnard, merchandise.....	25 06
" 31.	To Jay A. Cravens, salary.....	66 11
" 31.	To Alline Grove, salary	50 00
" 31.	To J. J. Hinman, salary	30 00
" 31.	To Cullen Thomas, salary	30 00
" 31.	To Philip Brodus, salary	50 00

June 5.	To Wm. B. Burford, merchandise.....	\$1 75
" 5.	To J. A. Cravens, expense	1 67
" 15.	To J. J. Hinman, Jr., salary.....	15 00
" 17.	To H. E. Barnard, expense	140 26
" 22.	To A. R. Tucker, expense	31 03
" 28.	To J. A. Cravens, expense	52 33
" 28.	To A. R. Tucker, expense	29 65
" 30.	To J. A. Cravens, expense	116 67
" 30.	To Mrs. M. E. Guy, expense	25 00
" 30.	To Cullen Thomas, expense	30 00
" 30.	To A. R. Tucker, expense	25 00
" 30.	To Phillip Brodus, expense	50 00
July 1.	To American Toilet Supply Co., laundry.....	3 75
" 1.	To Hollenbeck Wire and Iron Co., wire boxes.....	5 20
" 1.	To Indianapolis Tent and Awning Co., merchandise.....	13 20
" 1.	To Railroad Transfer Co., drayage.....	4 89
Total third quarter		\$1,019 12
July 12.	To H. E. Barnard, expense	\$6 05
" 12.	To J. A. Cravens, expense.....	27 42
" 12.	To A. R. Tucker, expense.....	35 15
" 25.	To A. C. Billups & Son, merchandise.....	23 75
" 25.	To Brinker & Habeny, merchandise.....	22 00
" 25.	To Charles Junker, boat	124 00
" 25.	To Central Supply Co., merchandise	19 80
" 25.	To Licking Coal and Tow Boat Co., wharfage.....	7 50
" 25.	To Municipal Journal and Engineer, subscription....	3 00
" 25.	To E. H. Sargent & Co., merchandise.....	59 80
" 25.	To Schnull & Co., merchandise.....	1 35
" 25.	To The Star Store, merchandise.....	3 05
" 31.	To J. A. Craven, salary	116 66
" 31.	To Mrs. Florence Vollrath, salary.....	50 00
" 31.	To Cullen Thomas, salary	30 00
" 31.	To A. R. Tucker, salary.....	25 00
" 31.	To Phillip Brodus, salary.....	50 00
Aug. 8.	To J. A. Craven, expense.....	54 37
" 31.	To J. A. Craven, salary	116 67
" 31.	To Mrs. Florence Vollrath, salary.....	50 00
" 31.	To Cullen Thomas, salary	30 00
" 31.	To A. R. Tucker, salary	25 00
" 31.	To Phillip Brodus, salary	50 00
Sept. 8.	To J. A. Craven, expense.....	89 00
" 8.	To Ballweg & Co., shipping cases.....	37 50
" 8.	To Central Rubber & Supply Co., merchandise.....	1 90
" 8.	To Elmer & Amend, merchandise	76 56
" 8.	To Johnson Foundry and Machine Shops, repairs....	6 00
" 8.	To E. H. Sargent & Co., merchandise.....	20 70
" 8.	To Adams Express Co., service	1 85
" 8.	To American Express Co., service.....	7 10

Sept. 8.	To United States Express Co., service.....	\$1 50
" 28.	To H. E. Barnard, expense	16 92
" 28.	To J. A. Craven, expense	80 82
" 82.	To J. O. Diggs, expense.....	12 45
" 28.	To A. W. Bruner, expense	33 05
" 28.	To B. W. Cohn, expense	18 90
" 28.	To F. W. Tucker, expense	48 74
" 28.	To John Owens, expense	58 30
" 28.	To John T. Willett, expense.....	48 56
" 28.	To J. R. Allen, auto hire.....	14 00
" 28.	To American Toilet Supply Co., laundry.....	4 65
" 28.	To Wm. B. Burford, merchandise.....	105 70
" 28.	To Consolidated Press Sign Co., merchandise.....	4 25
" 28.	To Adams Express Co., service.....	1 45
" 28.	To American Express Co., service.....	4 44
" 28.	To United States Express Co., service.....	60
" 28.	To International Instrument Co., merchandise.....	128 50
" 28.	To The H. Lieber Co., merchandise.....	10 65
" 28.	To J. B. Lippincott Co., book.....	7 50
" 28.	To George J. Marott, rubber boots.....	5 20
" 28.	To G. M. Mirrick, Agt., typewriter ribbons.....	4 50
" 28.	To Railroad Transfer Co., freight and drayage.....	7 71
" 28.	To The Sanborn Electric Co., merchandise.....	10 80
" 28.	To F. P. Smith & Co., merchandise.....	5 00
" 28.	To J. L. Anderson, telephone.....	50
" 29.	To H. E. Bishop, expense.....	23 90
" 30.	To J. A. Craven, salary.....	116 67
" 30.	To Mrs. Florence Vollrath, salary.....	50 00
" 30.	To Cullen Thomas, salary.....	90 00
" 30.	To A. R. Tucker, salary.....	25 00
" 30.	To Philip Brodus, salary.....	50 00
Total, fourth quarter.....		\$2,161 44
Appropriation		\$5,000 00
Expense first quarter		\$1,028 56
Expense second quarter		761 60
Expense third quarter		1,019 12
Expense fourth quarter		2,161 44
		<hr/> 4,970 72
Balance		\$29 28
J. J. Hinman, voucher, June 15th, paid out of Food and Drug Fund by error.....		15 00
Total reverting to general fund.....		<hr/> \$44 28

STATE BOARD OF HEALTH—CONTAGIOUS DISEASE FUND.

1911.		
May	5.	To Dr. W. F. King, expense..... \$66 48
"	5.	To C. P. Lesh Paper Co., paper..... 240 38
"	5.	To Educational Exhibition Co., charts..... 34 85
"	5.	To Francis Pharmacy Co., merchandise..... 1 30
"	31.	To Dr. W. F. King, expense..... 70 40
"	31.	To Dr. W. F. King, salary..... 166 67
June	30.	To Dr. W. F. King, salary..... 166 67
July	1.	To Dr. W. F. King, expense..... 66 75
"	1.	To Wm. B. Burford, merchandise..... 12 50
		<hr/>
Total first quarter.....		\$826 00
July	31.	To Dr. W. F. King, salary..... \$166 66
Aug.	8.	To Dr. W. F. King, expense..... 26 35
"	8.	To Adams Express Co., service..... 6 41
"	8.	To American Express Co., service..... 8 67
"	8.	To United States Express Co., service..... 5 97
"	8.	To Western Union Telegraph Co., service..... 75
"	8.	To postage stamps, expense..... 1 04
"	31.	To Dr. W. F. King, salary..... 208 33
Sept.	8.	To Dr. W. F. King, expense..... 13 90
"	8.	To Dr. J. W. Parrish, expense..... 4 00
"	8.	To A. W. Stubbs, V. S., services..... 5 00
"	8.	To Indianapolis Telephone Co., tolls..... 3 50
"	28.	To Dr. W. F. King, expense..... 21 90
"	28.	To Dr. J. P. Simonds, expense..... 1 60
"	28.	To United States Express Co., services..... 4 77
"	30.	To Dr. W. F. King, salary..... 208 34
		<hr/>
Total second quarter.....		\$687 19
Appropriation		\$5,000 00
Expense first quarter.....		\$826 00
Expense second quarter.....		687 19
		<hr/>
Total		1,513 19
		<hr/>
Total balance reverting to general fund.....		\$3,486 81

STATE BOARD OF HEALTH—HYDROPHOBIA FUND.

1911.		
Aug.	4.	To Mrs. A. M. Seward and child, railroad fare..... \$3 10
"	4.	To Mrs. Otto Rippey and child, railroad fare..... 3 10
"	4.	To Mr. Benj. F. Edwards, railroad fare..... 2 85
"	4.	To Mr. John H. Bailey, railroad fare..... 3 50
"	4.	To Mrs. R. P. Engelken, boarding patients..... 67 50
"	4.	To Mrs. J. P. Keeters, rooming patients..... 18 10

Aug. 4.	To Mrs. Chas. Nelson, rooming patients.....	\$10 80
" 4.	To H. K. Mulford Co., serum.....	140 00
" 4.	To Western Union Telegraph Co., service.....	4 46
" 4.	To Wm. H. Armstrong Co., surgical instruments....	16 85
" 4.	To Joseph C. Stokes Pharmacy, merchandise.....	1 95
" 19.	To Mrs. N. McCallum, board.....	9 00
" 19.	To Mrs. Minnie Orth, rooms.....	22 50
" 19.	To Mrs. R. P. Engelken, board.....	37 50
" 19.	To Lincoln Hospital, board.....	17 50
" 19.	To Royal Laundry, laundry.....	11 99
" 19.	To Dr. E. A. Fletcher, services.....	92 50
" 19.	To J. L. Anderson, expense.....	13 29
Sept. 8.	To The Francis Pharmacy Co., merchandise.....	6 95
" 8.	To American Express Co., service.....	2 00
" 8.	To Mrs. Anna Paswater, car fare.....	6 00
" 8.	To Mrs. Dora Brozette, room and board.....	5 80
" 8.	To Mrs. Harry McNally, room and board.....	10 30
" 12.	To Mrs. Otis Kevitt, car fare and board.....	18 10
" 25.	To H. K. Mulford Co., rabies serum.....	238 00
" 28.	To Dr. A. E. Fletcher, services.....	90 00
" 28.	To Benj. Quackenbush, board and room.....	14 15
" 28.	To Mrs. Elizabeth Ayers, board and room.....	19 50
" 28.	To Mrs. R. P. Engelken, board.....	24 25
" 28.	To Mrs. J. M. Davis, rooms.....	15 25
" 28.	To H. K. Mulford Co., rabies vaccine.....	35 00
" 28.	To Francis Pharmacy Co., merchandise.....	7 25
" 28.	To Western Union Telegraph Co., tolls.....	2 18
" 28.	To J. L. Anderson, expense.....	13 30
Total expense		<u>\$984 52</u>
Total receipts		\$3,983 15
Treasurer's quietus		<u>2 58</u>
Total		\$3,985 73
Expended		<u>984 52</u>
Balance		\$3,001 21
Less amount quietus reverted to general fund.....		<u>2 58</u>
True balance for 1911-12.....		<u>\$2,698 63</u>

STATE BOARD OF HEALTH—COLD STORAGE FUND.

1911.		
Sept. 30.	To A. W. Bruner, inspections.....	\$100 00
" 30.	To B. W. Cohn, inspections.....	100 00
" 30.	To F. W. Tucker, inspections.....	100 00
" 30.	To John Owens, inspections.....	100 00
Total		<u>\$400 00</u>
Cash balance		<u>20 00</u>
Total		<u>\$420 00</u>

July 22. By cash in treasury.....	\$360 00
Sept. 15. By cash in treasury.....	60 00
Total	\$420 00
Total received	\$420 00
Total expended	400 00
Oct. 1, cash balance reverting to general fund...	\$20 00

RECAPITULATION.

Appropriations.

Secretary's salary (specific).....	\$3,000 00
Chief clerk's salary (specific).....	1,500 00
Appropriation State Board of Health office.....	10,000 00
Appropriation Laboratory of Hygiene	10,000 00
Appropriation Laboratory of Pure Food and Drugs..	15,000 00
Appropriation Water Laboratory	5,000 00
Appropriation Contagious Disease Fund.....	5,000 00
Cold Storage Fund.....	420 00
Hydrophobia Fund	3,983 15
Total	\$53,903 15

Expenditures.

Secretary's salary (specific).....	\$3,000 00
Chief clerk's salary (specific).....	1,500 00
Office expenses	9,993 14
Laboratory of Hygiene, expenses	9,942 49
Laboratory of Pure Food and Drugs, expenses.....	14,998 01
Water Laboratory, expenses.....	4,970 72
Contagious Disease Fund, expenses.....	1,513 19
Hydrophobia Fund, expenses.....	984 52
Cold Storage Fund, expenses.....	400 00
Total	\$47,302 07
Total balance	\$6,601 08
Balance carried to Hydrophobia Fund.....	2,998 63
Total amount reverting to general fund.....	\$3,602 45

SPECIAL MEETING STATE BOARD OF HEALTH.

NOVEMBER 26, 1910.

Called to order 2 p. m.

Present: Drs. McCoy, Davis, Wishard, Tucker, Hurty.

The President announced the meeting was called in order to consider the letter of conveyance of report of 1910 to the Governor, to consider the report itself, and to consider the report to the Legislative Investigating Committee; also to sign the same and to attend to any other business which comes before the Board.

The letter of conveyance of report to the Governor was fully considered and approved. The report was well studied and approved and ordered delivered to the Governor.

Ordered: Poliomyelitis (infantile paralysis) is hereby placed upon the list of reportable infectious and contagious diseases, and it shall be regularly quarantined, as set forth in Section 3 of the Quarantine Law, approved March 4, 1903.

Ordered: That Dr. George T. McCoy and Mr. H. E. Barnard are appointed as delegates to represent the Board at the regular annual meeting of the Association of State and Federal Food and Drug departments at New Orleans, November 29 to December 2, 1910, their expenses to be paid from the food laboratory fund.

Adjourned.

REGULAR QUARTERLY MEETING OF STATE BOARD OF HEALTH.

JANUARY 13, 1911.

Called to order 2 p. m. by President McCoy.

Present: McCoy, Wishard, Tucker, Davis, Hurty.

The President announced the meeting was to consider and pass upon the affairs of the second fiscal quarter and the fourth calendar quarter of the Board, both ending December 31, 1910.

Minutes of the last regular meeting, October 14, 1910, and of the special meeting of November 26th, were read and approved in each separate part and as a whole.

REPORT OF SECRETARY FOR QUARTER ENDING DECEMBER 30, 1910.

This report is for the statistical quarter which ends with the calendar year and for the fiscal quarter, which also has the same ending. However, the calendar is the fourth quarter, and the fiscal is the first quarter of their respective years.

The prominent feature affecting the public health in Indiana was the appearance of poliomyelitis. Fifty-four deaths in all were reported for 1910. For the preceding ten years, there were only 20 reported. Estimating from the number of deaths, there must have been something like three to four hundred cases of poliomyelitis in the State during the year. We find many paralyzed children over the State.

At the regular quarterly meeting, held in July, an order was passed, placing this disease upon the quarantine list, but recommending a warning quarantine.

At the next regular meeting, October 14th, an order was issued making the quarantine absolute. In Indianapolis, Fort Wayne, South Bend, Terre Haute and Evansville, quarantine has been very rigidly enforced. It is impossible to give at this time the full statistics of this disease, because they have not yet been made up from the data.

Outbreaks of diphtheria have occurred at several towns in the State, but not of large dimensions. An epidemic worthy of mention here occurred at Lewisville, Henry County. Fifteen cases of diphtheria appeared, some of them very severe, but with only one death. One medical practitioner there had never used antitoxin, and was slow to take it up. A mother, whose children were attacked, telephoned to the State Board of Health, giving information of the situation, and Dr. Shimer of the laboratory visited the town, carrying an ample supply of antitoxin. He called at all of the houses where the disease existed, giving information, administering antitoxin and distributing circulars. In all, 12 children were given curative doses and eight were given immunizing doses. The epidemic immediately subsided.

The following tables show the status for smallpox and typhoid fever for the fourth quarter:

SMALLPOX.

	Number Cases Reported.	Number Deaths.	Number Counties Invaded.
October, 1909.....	112	0	10
October, 1910.....	2	0	2
November, 1909.....	185	1	13
November, 1910.....	53	0	4
December, 1909.....	92	0	14
December, 1910.....	45	0	7
Total, 1909.....	389	1	37
Total, 1910.....	100	0	13

TYPHOID FEVER.

	Number Cases Reported.	Number Deaths.	Number Counties Invaded.
October, 1909.....	478	155	75
October, 1910.....	701	159	78
November, 1909.....	301	104	71
November, 1910.....	427	115	67
December, 1909.....	131	52	50
December, 1910.....	336	61	47
Total, 1909.....	910	311	196
Total, 1910.....	1,464	325	192

VISITS.

The Secretary made twelve visits during the quarter, and full accounts are herewith appended.

October 2d, Fort Wayne: The object of this visit was on account of invitation of the local health department to make several inspections, to advise with the City Board of Health and to address the council upon the economy and importance of protecting the public health. The Secretary feels confident the visit was attended with good results, for the council made a larger appropriation than previously for health work.

October 5th, Lagrange: This visit was made upon invitation of the County Health Commissioner, Dr. D. W. Weaver, of Lagrange. Lagrange has annually what is called a "Corn School." The farmers from over the county bring their products for exhibition and this Corn School serves in Lagrange County the place of a county fair. Lectures are given upon subjects pertaining to the benefit of the health of the people every day and evening during the continuance of the Corn School. It was for the purpose of delivering two lectures upon public health that I visited Lagrange.

I had good audiences both times, and at both lectures close attention was given. Resolutions of thanks and confidence in the State Board of Health were passed.

October 22d, Tipton: This visit was upon invitation of the School Board and the Health Board of the city, for the purpose of making a public lecture upon the "Prevention and Cure of Tuberculosis." Also a talk to the school children. Both lectures were given and I believe they were appreciated and did some good, because of the resolutions which were passed to this effect.

October 31st, Noblesville: This visit was made upon invitation of the county authorities in order to inspect the poorhouse and advise with the county physician, Dr. F. A. Tucker, and with the auditor and others in regard to the improvements which should be made.

SANITARY SURVEY OF HAMILTON COUNTY POORHOUSE.

The present building consists of the original structure, to which has been added a new wing, which is called the female part. The female part may be disposed of, from the sanitary standpoint, in a few words by simply saying "It is in good condition and no recommendations are made in regard to the same."

There were 29 inmates at the time of the visit, 18 males and 11 females. There are seven bedrooms for 18 men and sometimes (we were told by the superintendent) 20 men must be cared for. The size of the bedrooms in the men's part were 9 x 16 x 9, with one window to each room. The size of the window was 20 x 30, two panes of glass of this size in each window. These windows are not large enough to properly light and ventilate these rooms, especially when more than two inmates are placed in a room. We are told that sometimes as many as four or even five slept in one room. In the men's department the floors are all bad. The plastering is cracked off in many places. Bugs and vermin live in the cracks in the plaster and it is a physical impossibility to get rid of them. The kitchen and dining-room are in the basement of the building, and are as clean as they possibly can be made under the circumstances, namely, bad floors, low ceilings, poor drainage. The roof over this department leaks badly. The ceilings all show "leak-stains." These stains are produced by the water from the roof leaking first through the roof and passing through the plaster. The storeroom, where the clothing is kept, is entirely unventilated. It is simply a dark, long cell. The laundry is bad, I will say very bad. The ceiling is low, the room is in the basement and the steam and odors pass into the rooms above. There is one bath-room for the men, and it is simply in the corner of the laundry, having been partitioned off in the crudest kind of a way. A crazy woman is confined in a corner of the laundry, her room being built of heavy lumber, the boards perpendicular, having spaces of two inches between them. This woman presents a pitiable condition and is a pitiful sight.

I recommend that the State Board of Health issue an order of condemnation against this poorhouse and I understand that said condemnation would be gladly received by the officials. I further understand the said county officials will be glad to have a specific order made as to exactly what shall be done to make the Hamilton County poorhouse sanitary in every respect.

November 2d, Logansport: This visit was made because of an appeal from the city health authorities on account of the existence of poliomyelitis. In all, 27 cases had appeared, with three deaths. The citizens were becoming a little panicky and demanded the interference of the State Board. I went over the ground thoroughly with the county health commissioner and the city health officer. It was determined that rigid quarantine should be established in every case, for at least 16 days. That an immediate order would be issued requiring all physicians to report without delay cases of poliomyelitis, and that said physicians should take the greatest care in visiting the patients. The said Board also ordered that the children in the public schools should be inspected upon the request of any teacher, the city health officer to do the inspecting and to employ help if necessary.

November 11th, Delphi: The object of this visit was to deliver a public lecture upon "Medical Inspection of Schools." The invitation came from the city authorities, although the lecture was given under the auspices of the Oracle Club. Fully 200 people were present, the audience filling the lecture room of the Carnegie Library. After my remarks a warm resolution of thanks was passed, also a resolution of confidence in the State Board of Health, also a resolution favoring the Medical Inspection Law.

November 27th, Tipton: This visit was made on invitation to address the Sunday Afternoon Men's Meeting. The address was given to men exclusively, in the auditorium of the Methodist Church. One hundred ten men, by actual count, were present. A resolution of thanks, as usual, was passed.

December 4th, Peru: This visit was made to address the Miami County Teachers' Institute. A large audience was present and the subject of the address was "The Medical Inspection of School Children." A strong resolution was passed endorsing the work of the State Board of Health, especially as it pertained to the health of school children. A second resolution supported the legislation for medical inspection which was contemplated by the State Board.

December 6th, South Bend: Upon invitation of the State health authorities and a number of physicians I visited South Bend, for

the purpose of meeting with the local Women's Club and other clubs and discussing the bill of "Medical Inspection of School Children." A large audience was present in the auditorium of the high school. After the lecture resolutions of thanks were passed, also resolutions endorsing the work of the State Board of Health, also resolutions strongly supporting medical inspection. An incident of this visit may be mentioned, and that was a letter from Ex-Judge Timothy Howard, who made the statement in said letter that he was completely converted to the cause of medical inspection and wished to give his personal commendation.

December 7th, Hammond: This visit was made to address the Teachers' Institute and also incidentally to address the high school. Both addresses were given. That before the high school upon the subject of personal hygiene, and that before the teachers upon hygiene and upon medical inspection. The usual resolutions of confidence and support were passed.

December 13th, Winchester, Green Township: This visit was made upon the invitation of the Randolph County Medical Society to appear before it and discuss the question of poliomyelitis. Twelve physicians, all members of the county society, were present. My paper, specially prepared upon the subject, was read and discussed at length. Every phase of the disease was considered. In the afternoon, with the county superintendent, I visited the new schoolhouse in Green Township. The State Board of Health condemned the schoolhouse in this county three years ago, then extended the condemnation and at last a new building, sanitary in every respect and meeting every requirement of the conditions, has been constructed. Upon our arrival at the schoolhouse, a large concourse of people had gathered, and finally my address of dedication was delivered. I was told that all of the objectors had not become mollified, but most of them had. And now the new schoolhouse is there, and the good work is going on.

December 26th, New Palestine: The object of this visit was to inspect the schoolhouse. Petition had been received complaining that very frequently the schools were dismissed because the building was not properly warmed. Upon arrival at New Palestine I met the janitor and the township trustee. Both were alive to the needs of the situation and the trustee said that before the school was opened in January that the heating apparatus would be repaired and increased in size, and that all would be satisfactory. No further action, therefore, was necessary.

THE BOARD'S CONSUMPTION EXHIBIT.

I am very glad, indeed, to be able to report that the exhibit which the Board ordered put out in the State, under the charge of Dr. King, has through its own merit and the excellent management of Dr. King, produced most favorable impressions. Dr. King has had the exhibit in each of the following cities for one week: Warsaw, the week beginning October 10th; Columbia City, week beginning October 17th; Auburn, week beginning October 24th; Plymouth, week beginning November 14th; Delphi, week beginning December 11th; Monticello, week beginning December 18th.

Dr. King has written full reports for all of these meetings, and has attached thereto newspaper clippings approving and supporting the idea of the exhibit. The said reports are added to this, the Secretary's report for the quarter.

After the Monticello meeting, the exhibit was sent to the home office, where it was gone over, various repairs made and then placed in the northwest corridor of the State House, to remain as long as might seem profitable.

Attached to the Secretary's report is one made by Dr. C. A. Carter, who was sent to inspect the conditions at Greensburg. Complaint had been received that the city health officer was not attending to his duties, and appeal was made to the Board. Said report explains itself.

THE YEAR'S WORK OF THE STATE BOARD OF HEALTH FOR 1910.

In addition to the four regular meetings held during the year, the Board held six special meetings. At the regular meetings the reports of the various departments were reviewed and, after necessary corrections, were received, the policies and directions for the conduct of affairs were laid down, questions of public health discussed and bills allowed.

The Annual Report will give the Board's acts and proceedings in detail.

ADMINISTRATIVE AND EXECUTIVE DEPARTMENT.

This department reports an average of one hundred and forty-four letters received and answered each working day; 100,000 circulars on the prevention and management of infectious diseases

distributed; sixty-seven unsanitary schoolhouses condemned and the remodeling or construction of new ones started; fifty-four special visits and inspections by the executive officer; 360 special hearings concerning sanitary matters with county, township, city and town officials, and with representatives of firms and corporations and citizens. The tuberculosis and food exhibit has been shown in twelve towns and cities, and in connection therewith 20,000 disease prevention circulars were distributed and over 100 public lectures were given on hygiene and public health.

VITAL STATISTICS.

The basis of all public health work is *vital statistics*. Correct records of births, deaths, infectious diseases, marriages and divorces, are necessary that the monuments of society may be followed; that the vital latitude and longitude of the human family may be known; that family and individual records for possible legal uses may be kept; that data of immense worth in medical science may be at hand for the use of the medical scholar; and lastly, that the sociologist may better study and understand the complex social problems which are to be solved.

The vital statistics show that for the year ending December 1, 1910, there were 34,696 deaths and 53,811 births. The death figures are very nearly free from error, but the birth figures are about fifteen per cent. short. The collecting, tabulating, classifying and analyzing of these thousands of deaths and births represents immense patient labor. A difficult matter attending this work is the securing of definite causes of death from the members of the medical profession. Polite requests for a definite statement as to whether or not the pneumonia was lobar or bronchial, or as to the part affected by tuberculosis, are frequently answered curtly, or even in anger. However, by far the greater number of doctors are pleased to correct and be definite and scientific in their death returns. Many doctors also do not seem to appreciate that death and birth certificates constitute legal records and are of the greatest importance to the families they serve, as well as of importance to the State and to the science of medicine. Such unappreciative doctors are neglectful in making out certificates of the deaths and births they attend, and so they fail in their duty to give full and complete service.

The mortality from the diseases herewith named I show first, the figures for the year ending December 1, 1910, and second the same figures for the preceding annual period:

Typhoid fever, 799-821; pulmonary tuberculosis, 3,407-3,363; pneumonia, 2,458-2,385; diphtheria, 303-274; scarlet fever, 183-126; puerperal fever, 142-162; measles, 409-153; diarrhoeal diseases under 2 years, 1,956-1,765; cerebro spinal meningitis, 64-107; cancer, 1,566-1,619; smallpox, 1-5; poliomyelitis, 54-20. Total death rate for whole State, 12.3. Birth rate, 19.0.

The work of the Vital Statistics Department requires the full time of one chief clerk of vital statistics, two assistant clerks, and the partial time of two stenographers, who do compiling and tabulating when not engaged in stenographic or copying work. This small force makes plain why the annual reports are delayed and why so few tables are constructed. To do the vital statistics of the State full justice would require double the force the State Board is permitted to employ.

FOOD, DRUG AND WATER LABORATORIES.

While it is impossible to determine the value of the work done in the chemical laboratories of the State Board of Health by detailing analytical analyses, yet it is difficult in any other way to establish any other measure of the activity of the department. A tabulation of the analytical data shows that 1,015 sanitary analyses of water were made during the year, and that of this number 632 samples were found to be sanitarily good; 252 waters were bad and wholly unsuitable for drinking and domestic purposes; 82 samples were of doubtful character, that is, at present not sufficiently polluted to be unfit for use and yet bearing every indication of pollution which will sooner or later render them unfit for use. One hundred and ninety-one of these waters were from public supplies; 630 from private supplies; 28 schoolhouse supplies and 117 samples were sent in from wells where typhoid fever existed in the family using the water. It is worthy of comment that 52, or nearly 50 per cent., of these waters were unqualifiedly bad and were no doubt in many instances responsible for the typhoid fever.

The drug laboratory analyzed during the year 444 drug samples, comprising a great variety of drugs commonly used in treating disease. Of this number 242 were legal, and 202, or 45.4 per cent., illegal. In 1906 the percentage of adulteration of drugs was 66.5; in 1907, 52.9; in 1908, 47.7; in 1909, 35.8. The work of last year shows an increase in the percentage of adulterated drugs, although the figures obtained show a slight advantage over those for 1906, 1907 and 1908. An urgent necessity for a careful control of

the drug supply is indicated by the fact that even under a rigid law, actively enforced, 45 per cent. of the drug supply is illegal.

During the year 2,442 samples of food were analyzed, of which 688 samples were unadulterated and properly labeled, and 754 either adulterated or misbranded. This is equivalent to a percentage of adulteration of 30.8. In 1906, the year prior to the passage of the Pure Food Law, the percentage of adulteration was 42.3; in 1907, 20.8; in 1908, 14.9; in 1909, 33.8. These figures do not show the improvement over earlier results which the volume of the work done warrants, because of the fact that the inspectors do not now collect samples for examination unless they believe that they are either misbranded or adulterated, whereas, when the work was started and before they knew anything of the condition of the markets, they purchased miscellaneous samples without regard for, or knowledge of, their probable composition.

Two hundred and forty-five cases were filed against dealers for violation of the Pure Food and Sanitary Food Laws. Two hundred and eighteen convictions were obtained. In the other cases, defendants were acquitted or released under suspended sentences. The fines and costs imposed amounted to over \$5,000.

During the year the inspectors made 10,662 sanitary inspections of food producing and distributing establishments. Of this number, they scored 320 places as excellent; 5,981 as good; 3,629 as fair; 626 as poor and 106 as bad. Results of their work show a marked improvement in the sanitary conditions of the establishments visited.

In addition to the data given above, much valuable work has been done which is not indicated by the tables in the annual report. A complete sanitary survey has been made of the Calumet River. The department has prepared a great deal of evidence in the defense of an injunction suit brought against the State Board of Health and the State Food Commissioner, in the Federal Court. A valuable study has been made of the character of the standard pharmaceutical preparations manufactured by Indiana drug houses. A sanitary inspection has been made of all the canning factories of the State.

DEPARTMENT OF BACTERIOLOGY AND PATHOLOGY.

This department is known as the Laboratory of Hygiene. It employs three bacteriologists and pathologists, with one student assistant, one stenographer and one janitor. In the twelve months

just ended 10,091 specimens were received, examined and reported upon. This is an increase of 2,004 specimens over the largest number examined in any previous year.

Of 3,838 samples of sputum examined, 1,125, or 29 per cent., were found to contain tubercle bacilli. Fifty-four per cent. of the positive sputa were from women, 46 per cent. from men. Nearly two-thirds of these positive specimens were from patients between 21 and 40 years of age. In 51 per cent. of the positive cases there were then, or had been, other tuberculous patients in the same family; in 7 per cent. the patient had been more or less closely associated with persons known to be tuberculous; while in 42 per cent. there was unknown source of infection. In May, 33 samples of sputum were picked up at random on the streets of Indianapolis. Three of these, or 9 per cent., contained tubercle bacilli.

Altogether, 2,288 throat cultures were examined and 622, or 27 per cent., contained diphtheria bacilli. Nearly 60 per cent. of all positive cultures were from children in the school age of 6 to 14 years, inclusive. A comparison of the clinical and bacteriological diagnoses shows that only 58 per cent. of cases diagnosed diphtheria on clinical grounds proved positive on bacteriological examination, while 18 per cent. of those diagnosed "tonsilitis, etc.," were proved to be true diphtheria. One-third of the cases in which a membrane or exudate was said to be present, and 16 per cent. of the cases with no membrane or exudate were found to be true diphtheria. Only 27 per cent. of all positive first cultures were from patients known to have been exposed. Epidemics of diphtheria of greater or less magnitude were investigated by members of the laboratory staff at Shelbyville, Westfield, New Palestine, Kouts and Loogootee.

One thousand six hundred twenty-one specimens of blood were examined for the Widal reaction, of which 172, or 10.5 per cent., proved positive. Epidemics of typhoid fever were investigated by members of the laboratory staff at Plainfield, New Castle, Bloomington, Thorntown, and Bloomfield. Of 189 specimens of blood examined for malarial parasites, only 11 were positive.

Of 470 specimens of pus from the genital organs, 164 (35 per cent.) contained gonococci. A special study of gonorrhea in children has been made by Dr. Schweitzer. The study was based on 12 cases in female children under 12 years of age. Specimens from these cases were examined at the laboratory and the clinical data secured through the courtesy of the attending physicians.

The brains of 148 animals were examined for evidence of rabies. Of these, 74, or 50 per cent., were found positive. The epidemic of rabies shows little tendency to decrease. In 1908, there were 81 cases; in 1909, 63; and (up to December) in 1910, 78. The disease has, within the last six months, appeared in territory hitherto free from it.

Three hundred thirty-five specimens of pathological tissues were examined during the year, and eight autopsies performed by the superintendent of the laboratory. Of 14 specimens of intestinal parasites, 3 were found to be dipterous larvæ. Of 42 specimens of cerebro spinal fluid, only 2 contained meningococci. Miscellaneous samples, such as milk, water, pus, etc., to the number of 1,174 were examined.

Twelve thousand two hundred seventy mailing outfits were supplied to physicians during the year.

INSPECTION AT GREENSBURG.

BY DR. C. A. CARTER.

DECEMBER 2, 1910.

According to request of the State Health Commissioner, I visited Greensburg December 2, 1910, complaint having been received that the health officer was not attending to his duties in regard to keeping proper records, and failing to collect vital statistics. I inspected the records as kept by Dr. D. W. Weaver, the County Health Commissioner. An inspection of the records shows them to be well kept and that Dr. Weaver has the proper conception of the importance of complete and accurate vital statistics. Recently he has had occasion to look up records made in former years. Dr. Weaver has adopted a method of checking births which has proved valuable. He sends notices to physicians each month urging them to report births promptly. I could find no fault with the records as kept by Dr. Weaver.

I inspected the records of the City Health Department as kept by Dr. S. B. Hitt. The records were incomplete and the doctor was not making effort to get complete and accurate returns. Dr. Hitt, like a number of other health officers, has the mistaken idea that he must accept and record the certificates in the way they are sent in, regardless of any errors. After explaining to him the importance of correct returns, and that he was not bound to accept those that were incomplete, he assured me he would make every possible effort to have them complete in the future.

REPORTS OF TUBERCULOSIS EXHIBIT.

DR. W. F. KING.

Acting under the orders of the State Board of Health, I had charge of the Tuberculosis Exhibit in the following cities of the State. In all cases the exhibit was made occasion of what we called "Health Week," lasting

from Monday until Friday, the exhibit being made the center or nucleus around which work in all health lines was conducted. The program in every city visited included inspections of food producing establishments by Inspector F. W. Tucker, who accompanied the exhibit, lectures before the schools, both grade and high schools; conferences with health officers and city officials; talks to teachers' meetings and before women's clubs; conferences with township trustees and school officials, and a general lecture on tuberculosis, illustrated by stereopticon views. This "Health Week" program was observed in—

Warsaw, the week beginning October 10th.
 Columbia City, the week beginning October 17th.
 Auburn, the week beginning October 24th.
 Decatur, the week beginning November 1st.
 Plymouth, the week beginning November 14th.
 Valparaiso, the week beginning November 21st.
 Hammond, the week beginning November 28th.
 Rensselaer, the week beginning December 4th.
 Monticello, the week beginning December 11th.

After the week at Monticello, the exhibit was sent in to the office for repairs and new supplies.

In every city visited the interest shown by the public in the work was of the highest order. An average attendance of at least 3,000 people was noted in every city. Several thousand copies of the different health circulars issued by the State Board of Health were distributed and many thousand more could have been well placed had the supply been available. This exhibit work is, indeed, splendid work. People are eager for knowledge in regard to the vital principles of disease, prevention and good health. No wiser expenditure of money can be made than that in carrying such a campaign of education into every city and hamlet in the entire State of Indiana. It is work of the most practical and effective sort, for it comes into direct contact with the people.

Inspector Tucker was valuable help in all this campaign, and the wisdom of having the assistance of the Pure Food Inspector of the district in which the campaign is being conducted has been abundantly proven.

Dr. McCoy moved that the Secretary is instructed to specially inform all health officers, and through them the undertakers, about the very great importance of burial permits being issued before burial.

The President announced that his term would expire March 1st, and the Secretary's term would expire February 2d, and it was in order to elect successors. Dr. Davis nominated Dr. Wishard for the presidency for two years, beginning March 1, 1911. The vote was unanimous and Dr. Wishard was declared elected.

Dr. Tucker nominated Dr. Hurty for Secretary, to succeed himself, the term to be for four years from February 2, 1911. The

vote for Dr. Hurty was unanimous and he was declared elected for the term named.

Dr. Tucker moved that the President appoint two delegates to represent the Board at the annual meeting of the National Tuberculosis Association, at Denver, in June; from there to San Francisco, in same month, to represent the Board at the annual meeting of the Conference of State and Provincial Boards of Health; from there in the same month to represent the Board in the Section on Preventive Medicine and Public Health at the annual meeting of the American Medical Association, at Los Angeles, the expenses of said delegates to be paid from the general fund of the Board.

Carried.

The President then appointed Dr. F. A. Tucker and Dr. J. N. Hurty to represent the Board at said meetings.

Motion by Dr. Tucker:

Inasmuch as the trustees of the State Tuberculosis Hospital have selected the superintendent and assistant superintendent of said hospital, and are about ready to open said hospital, be it

Resolved, That the Indiana State Board of Health, as a Board and as individuals, do hereby offer our aid and assistance to said hospital officials and trustees to make same a success in all possible ways, because of its humanitarian object and purposes.

Carried.

Report of delegate to fourteenth annual session of the Association of State and Federal Food and Drug Departments:

COLUMBUS, IND., December 12, 1910.

To the Indiana State Board of Health:

GENTLEMEN—As your representative I attended the fourteenth annual session of the "Association of State and Federal Food and Dairy Departments," which convened at New Orleans, La., November 29, 1910, and was in session until December 2, 1910. Thirty-eight States were represented, and a most profitable session was held. The meetings were not characterized by acrimonious debates as in some former occasions, but simply enough of the controversial spirit to add spice to the discussions. Former meetings have been noted for the number of papers presented, thus limiting the time of discussion to the minimum, but at this meeting the reverse held good, as few papers and abundant and thorough discussions was the order of the day. This was one of the points that helped to make this the most profitable meeting held for a number of years.

The Hon. Secretary of Agriculture failed to attend the meeting, and his place on the program was not filled. He sent a letter filled with re-

grets and expressions of "highest regard and personal esteem for those engaged in the work of protection of the stomachs of the people."

The fixing of standards, and the education of the people to the necessity of absolute sanitation in the matter of handling and manufacturing food for human consumption overshadowed all other topics of this meeting. Food adulteration is morally wrong and not simply a violation of a certain statute. Education to go hand in hand with legislation. The sanitary preparation and distribution of foods and food products was brought before the Association by Mr. H. E. Barnard, Food and Drug Commissioner of the Indiana State Board of Health, in his paper entitled "Sanitation." This was an exceedingly valuable paper and received more discussion than any paper read during the meeting.

It was the pleasure of your representative, in discussing other papers, to frequently refer to the fact that while uniformity of standards were essential and greatly to be desired by every member of the association, and all food workers, *sanitary preparation* of foods was far more important. The standard for milk may be modified frequently and no great harm result, but the sale of *dirty milk* is a crime. The surgeon that puts dirty hands into the mother's belly is no more of a criminal than the man who puts dirty milk into her baby's stomach.

It was a pleasure to note that in discussing food and drug adulterations, patent medicines, etc., that the health side as well as the commercial side was brought prominently to the front. It is a hopeful sign to see public health and sanitary sciences taking the place of commercialism in the deliberations of a great body of food chemists.

"Butter Substitutes," by the Hon. William P. Cutter, Food and Drug Commissioner of Missouri, brought out a thorough and sometimes spirited discussion, and here as elsewhere "wholesomeness as well as commercial value" was the key note.

The paper on "State and Municipal Control in Relation to Food Products," by the Hon. George M. Whittaker of the dairy division of the United States Department of Agriculture, was one of the most valuable papers read. Naturally the milk question was largely the theme of discussion, and many phases of this problem were touched upon in the general debate which followed.

I wish to call your attention to a few statements made by Mr. Whittaker: "Regulations concerning the adulteration of milk and the sale of oleomargarine are largely matters of commercial dishonesty; while the dairy inspection growing out of the science of bacteriology and the light it throws on dairy problems, is a *health matter*, and in preparing this paper the *health side* of the case has been the nearest to my thoughts."

The trend of the paper and the discussion following was in the direction of concentration of inspection of the dairies and inspection of milk, placing the whole under police powers, the inspection of *dairy cattle* being left to the State or to State officials employed by the local health officer or inspector.

The paper, "Labeling," by the Hon. Wilbur F. Cannon, Food Commissioner of Colorado, was an instructive and interesting handling of the subject. The importance of pure drugs and correct labeling was the keynote of the paper, which also recommended a complete separation of

politics and food departments. The discussion of this paper brought out some scorching denouncements of religious periodicals that admitted patent medicine advertisements to their pages.

"The religious (especially the denominational) papers are accepted in many families with almost the same reverence as the Bible, and their statements looked upon as absolutely truthful, therefore, the incalculable harm they may do by advertising fraudulent and often dangerous nostrums and pretended cures to their trusting readers. If the religious publications had real grit, and the courage of their convictions, they could stop much of this fooling of the public and endangering the health of simple and credulous people."

The advertisements of the dangerous cocaine, containing "catarrh snuffs" and the seductive "Coca-Cola" should be rejected for the reason that they contain cocaine and are habit-forming drugs. One of the resolutions adopted at this meeting reads as follows:

"Whereas, There appear in many of the papers, journals and magazines of this country false and misleading statements concerning the therapeutic value of so-called patent or proprietary preparations, which are intended to deceive the public, therefore, be it

"Resolved, That this Association deprecates such advertisements as being a menace to the public welfare, and contrary to the spirit of the National Food and Drugs Act."

It would be impossible in the time and space allotted to mention all of the good papers and discussions of the session. Every paper was discussed, which speaks for itself.

I noticed at this meeting a larger number of representatives of health departments (in contradistinction to food departments) than at other meetings of this kind. This is as it should be. The health officer can learn a great deal by attending the meetings of food chemists, and he may also be of some use to the chemist by pointing out, as occasion may favor the well proven fact, that *conservation of health* should be the object of all food investigations. A mutual interchange of thought will be of great benefit to both.

Taking the papers as read and the discussions following, one object seems to stand out prominently, and that is, there is "complete harmony between State and federal food and drug laws, uniformity of standards, correct system of weights and measures, and sanitary production and distribution of all food products."

In addition to the scientific program there were other interests to take up the time of the delegates. A visit to the sugar factory of the Reserve Plantation was one of the pleasant as well as instructive side lines. This great factory is grinding 2,000 tons of sugar cane daily. A sweet run of business surely. No dirty methods were noticed in this factory. New Orleans sugar and syrup from this factory are certainly clean. There were also visits to rice mills, which, just now, has special interests in the discussion of the causes of Pellagra.

The immense filtration plant of the city was also visited. An efficient and obliging chemist in charge of the plant showed the visitors marked attention, even emptying a reservoir to demonstrate the method of clean-

ing and refilling. New Orleans is furnishing to her inhabitants a good water taken from the great Father of Waters, properly *filtered* and *softened* and delivered in plentiful quantity.

The attendance upon the sessions of the meeting has been a great pleasure to me, and I hope not without benefit to myself as well as to the Honorable Board, whose representative I have the honor to be.

GEO. T. MCCOY.

The above report was accepted and ordered spread of record.

SPECIAL MEETING STATE BOARD OF HEALTH.

FEBRUARY 16, 1911.

Called to order at 7 p. m.

Present: Drs. McCoy, Davis, Wishard, Tucker, Hurty.

The President announced the meeting was called to meet the Senate Committee on Public Health to consider Senate Bill No. 369 (Gers) which provided for the reorganization of the State Board of Health, and also to consider other proposed health legislation which might come up.

Ordered: That Dr. J. P. Simonds represent the State Board as its delegate to attend the annual meeting at Chicago, April 27-28, of the Association of American Pathologists and Bacteriologists, his expenses to be paid from the Laboratory of Hygiene fund.

Ordered: The Secretary shall have the school buildings at Richmond inspected and reported upon.

MET SENATE COMMITTEE ON PUBLIC HEALTH.

It now being 7:30 p. m., the Board adjourned to committee room No. 70, to meet the Senate Committee on Public Health and consider with them the amendments to the health law, introduced by Senator Henry Gers of Daviess County, which is known as S. B. 369. Said bill only amended Section 1 of the health law. It provided that ten days after the passage of the act the appointing Board composed of the Governor, Secretary of State and Auditor of State should meet and appoint five members of the State Board of Health, two to serve until March 7, 1913, two until March 1 1915, and one until March 1, 1917. This Board should then organize and elect a president and vice-president, to serve two years.

and a secretary, who should be a physician, to serve for four years. The terms of all to begin March 1, 1911.

Chairman Senator Gers called the meeting to order and read his bill. No one spoke for the bill, Senator Gers saying his argument would be made on the floor of the Senate. The following gentlemen spoke against the bill, all pronouncing it entirely unnecessary and even retrogressive: Drs. McCoy, Tucker, Davis, Wishard, all of Indianapolis, and Dr. S. N. Quillin of Linton, and Dr. E. G. Reynard of Union City. Ex-Attorney-General Wm. L. Taylor was present and also spoke against the bill, arguing it was uncalled for and actually bad.

Upon adjournment of the Senate Committee the members of the Board returned to the office of the Secretary, and there being no more business, it adjourned.

REGULAR QUARTERLY MEETING.

APRIL 7, 1911.

Called to order at 2 p. m.

Present: Drs. McCoy, Davis, Tucker, Wishard, Hurty.

President McCoy announced the meeting was the regular quarterly meeting, and that the affairs of the Board for the second fiscal quarter ending March 31, 1911, and the first calendar quarter ending March 31, 1911, were to be considered, also any other business which might come before the Board.

Regular order of business was suspended and a motion prevailed to hear Dr. J. N. Taylor, President of the Crawfordsville City Health Board, and Dr. W. G. Swank, Secretary.

Dr. Taylor read as follows:

CRAWFORDSVILLE, IND.

Crawfordsville is situated upon a terminal moraine of the great glacier, in the midst of a clearly defined though irregular basin, nearly circular in form and some eight or ten meters in diameter; to the west and north, fairly outlined, the limestone crops out, forming the river; the interior is "drift" composed of irregular strata of soil clay, gravel, sand and "hard-pan," in which lies water at varying depths. The surface is undulating and traversed by a number of ravines; the largest being that in which is situated the pump-house and reservoir of the Crawfordsville Light and Water Company. Joining this, almost at right angles, is a deep, wide ravine known as the "Janey Jones Hollow," once a part of the Whitlocke

estate, and for many years used as the deposit place of the refuse of the city. The sides are precipitous and partly clothed with small trees, shrubs and grass; the bottom is traversed by a small, clear brook, which at times of flood is transformed into a rushing torrent of muddy waters, bearing on its bosom debris of many kinds. At the foot of the declivity on either hand, issue a number of small, clear but shallow springs—more of these on the east than on the west. The head of this ravine rises quite near to one of the principal streets of the town, and is penetrated by a large culvert, into which discharges the ditches that parallel the Monon Railway through the city for the distance of one-half mile, and also the drainage of the slopes of Dubois avenue and of Market street, and the watershed abutting thereon. The Monon Railway upon the west of the ravine describes a partial curve, beginning within a few feet of its head, and terminating several rods away. Upon the half-oval thus formed, and near the ravine, are a number of old houses, which, not having access to the sanitary sewer, are provided with outside privy vaults of primitive construction. On the east is Dubois avenue, an improved street, provided with curb and gutter, which for perhaps one-fourth of the distance extends along the brink of the ravine which then diverges, then approaches quite near to the brink at a point near one of the springs. Fast trains approaching from the south in the dry season carry with them clouds of dust, which, mingling with the dust arising from the adjacent streets, cover the vegetation that clothes the sides of the ravine, and thus adds another complication to the situation. Along both sides of the avenue are a number of dwelling houses, nearly all of which possess sewer connection, there being but two or three near the northern extremity which have outside closets and waste-pipe.

The above is a brief outline description of the territory in question. For a more specific and accurate description, I now refer you to the accompanying maps.

Dr. Taylor stated the Crawfordsville Board of Health had condemned the proposed source of water supply and requested that the said condemnation be confirmed by the State Board.

After consideration it was

Ordered: The Secretary shall investigate the matter and report to the Board, with recommendations.

Regular order resumed.

Minutes of last meeting read. Dr. McCoy introduced the following motion:

Whereas, At the regular quarterly meeting of the Indiana State Board of Health, January 13, 1911, this Board proceeded to the election of President, Vice-President and Secretary, to serve, respectively, for two and four years, and

Whereas, The custom of the Board has been to elect officers of the Board at the quarterly meeting in April of each alternate year, therefore, be it

Resolved, That this act of the Board was irregular, and is, therefore, rescinded, and that such portions of the minutes referring to said election be expunged from the record, and that we now proceed to the regular election of officers.

Motion was seconded by Dr. Davis, and after discussion was unanimously carried, and the Secretary ordered to strike out with red ink those minutes of the meeting of January 13th which were repealed and annulled by this action.

The President announced that his term would expire April 14, 1911, and the Secretary's term would expire April 14, 1911, and it was in order to elect successors. Dr. Davis nominated Dr. Wishard for President for two years beginning April 14, 1911. The vote was unanimous and Dr. Wishard was declared elected. In the same form and manner Dr. F. A. Tucker was elected Vice-President.

Dr. Tucker nominated Dr. Hurty for Secretary to succeed himself, the term to be for four years from April 14, 1911. The vote for Dr. Hurty was unanimous, and he was declared elected for the term named.

The Secretary's report was read, received and ordered spread of record, as follows:

REPORT OF SECRETARY FOR THE QUARTER ENDING MARCH 31, 1911.

This quarter is remarkable in the history of the State Board of Health and the history of public health work in Indiana. This is true because the Sixty-seventh General Assembly passed seven laws of great importance directly and immediately affecting the public health. Each one of these laws is very progressive and in some ways ahead of most the States in the Union. Besides these important laws, the Legislature gave the State Board of Health \$25,000 more per annum than it has ever had before. Five thousand dollars of this sum is now available and is to be used for the suppression of infectious and contagious diseases, with poliomyelitis particularly in view. Ten thousand dollars more per annum has been added for the direct uses of the central office; \$5,000 more is added for the use of the Pure Food Department and about \$5,000 for the purpose, if thought necessary, of establishing a Pasteur Institute and for the relief of indigents or semi-indigents who have been attacked by rabid dogs.

The laws referred to are as follows:

Sanitary Schoolhouse Law.—This provides that all new school-houses built after the passage of the act, or which are remodeled, shall conform to certain specified sanitary principles. The penalty for violation of the law is unique and deserves mention. This penalty says, "All money claims for material or labor which enter into the school building which does not conform to the conditions herein laid down shall be null and void."

The second most important law is that referring to the medical inspection of school children. This law is optional. That is, local authorities may institute medical inspection of school children or not as they please, but distinct permission is given and the advice of the Legislature offered that medical inspection be instituted. If medical inspection is instituted it shall be according to the forms and methods laid down in the law.

The third law refers to the prevention of ophthalmia neonatorum. It commands that persons in professional attendance at childbirth shall make close examination of the child and if it appears there is the least reason to suspect the infection of the eyes, that the same shall be given such treatment as is recognized by scientific medicine. Report must be made of the child's birth and also whether or not prophylaxis was practiced against ophthalmia neonatorum within thirty-six hours after birth. Failure to make report renders bills for services null and void and subjects the violator of the law to a fine of not less than ten to fifty dollars.

The fourth is termed the Hydrophobia Law. This provides that five per cent. of the excess dog tax shall be paid into the State treasury to constitute a fund for paying the expenses incident to giving the Pasteur treatment to those bitten by rabid dogs and for establishing a Pasteur Institute, if thought necessary.

The following tables show the status of smallpox and typhoid fever for the first quarter:

SMALLPOX.

	Number Cases Reported.	Number Deaths.	Number Counties Invaded.
January, 1910.....	189	0	25
January, 1911.....	155	0	12
February, 1910.....	83	1	23
February, 1911.....	90	0	20
March, 1910.....	107	0	21
March, 1911.....	117	2	21
Total, 1910.....	379	1	69
Total, 1911.....	371	2	53

TYPHOID FEVER.

	Number Cases Reported.	Number Deaths.	Number Counties Invaded.
January, 1910.....	131	47	40
January, 1911.....	115	39	35
February, 1910.....	110	34	36
February, 1911.....	94	36	26
March, 1910.....	71	33	30
March, 1911.....	91	36	26
Total, 1910.....	312	114	116
Total, 1911.....	300	111	87

The work of the Board for this, the first quarter of the statistical year and for the second quarter of the fiscal year, has gone on without interruption and very satisfactorily. All statistics have been promptly and carefully collected and duly tabulated. The correspondence has been kept up and numerous visitors and callers have been met, and advice has been given in many instances where new schoolhouses are to be built.

VISITS.

The Secretary made the following visits during the quarter:

January 2, 1911, Shirley. On account of public lecture upon invitation of the Henry County Farmers' Institute.

January 6th, Pittsboro. Visit made for public lecture on public health at invitation of Hendricks County Teachers' Institute.

January 11th, Petroleum and Fort Wayne. Visit made on account of the dedication of new schoolhouse at Petroleum, and on account of public lecture at Fort Wayne.

February 15th, Otterbein. Visit made on account of invitation of Farmers' Institute of Benton County.

February 17th, Maxwell. Visit made on account of public lecture upon invitation of Hancock County Farmers' Institute.

February 18th, Coatesville. Visit made on account of lecture upon invitation of Hendricks County Teachers' Institute.

February 24th, Liberty, on account of public lecture on invitation of the Union County Teachers' Institute.

February 28th, Terre Haute, on account of special meeting with the Vigo County Medical Society.

March 10th, Marion, on account of lecture upon invitation of State Association of Teachers of Science and Mathematics.

March 15th, Boggstown, on account of petition from patrons of Boggstown schoolhouse and trustee, to make sanitary survey of said schoolhouse.

March 16th, Greencastle, on account of evening lecture upon invitation of officials of DePauw University.

March 25th, Shelbyville, on account of smallpox.

March 27th, Fort Wayne, on account of health work in that city when our tuberculosis and health exhibits were shown for the week. Six public health lectures were made in addition to one delivered at Bluffton.

Below are given in detail what was done upon these visits and results believed to be attained.

Shirley.—January 2d. I met a large audience in the Christian Church. Indeed, it overflowed the church and many were turned away. My address was illustrated, and was upon the prevention and cure of tuberculosis. Circulars were distributed and a resolution was passed by the farmers' institute thanking the State Board of Health and expressing confidence in its work.

Pittsboro.—January 6th. My lecture was made upon invitation of the Hendricks County Teachers' Institute. My lecture, in which I told of the work of the State Board of Health and went into the details of school hygiene, was well received. A resolution of thanks and commending the work of the State Board of Health was passed.

Petroleum.—January 11th. This Board condemned the schoolhouse at Petroleum two years ago and a new one was constructed, and upon this date the dedication was held. The building is a large, modern structure, conforming in every respect to the sanitary rules of construction laid down by the State Board of Health. The building is a beautiful one, well located in large grounds, and the township and town of Petroleum are to be congratulated upon having such a building. A large audience was present. The Secretary made the dedicatory address, which was well received. A resolution of thanks was passed by the audience and said resolution commended the work of the State Board of Health.

From Petroleum I went to Fort Wayne to make a public lecture before the business men's organization. This lecture was entitled, "A Big Business Proposition." In it I tried to make plain the fact that the protection of the public health and the conservation of the vitality of the people was without doubt about the big-

gest business proposition before the people today. A resolution of thanks for the address was passed.

Otterbein.—February 15th. This visit was upon invitation of the Benton County Farmers' Institute. The large hall was well filled. I talked upon the work of the State Board of Health and school sanitation. The address was well received, and a resolution of thanks was passed.

Maxwell.—February 17th. Upon this date I visited Maxwell upon invitation of the Hancock County Farmers' Institute, and delivered the usual illustrated lecture upon the prevention and cure of tuberculosis. A goodly number of circulars was distributed and the people were appealed to to help with the Legislature in the passage of health laws. A committee was appointed, which represented the meeting, to write letters to their legislators urging them to vote for the health bills under consideration at that time.

Coatesville.—February 18th. This visit was made upon invitation of the Hendricks County Teachers' Institute, for the purpose of addressing the institute upon school hygiene and the work and duties of the State Board of Health. A very good audience was present and the lecture was well received. A resolution of thanks was passed.

Liberty.—February 24th. The Union County Teachers' Institute invited me to be present and to address them upon the subject of the work of the State Board of Health and school hygiene, and also the prevention and cure of tuberculosis. A large audience was present in the court room of the Union County Courthouse. Many persons could not secure admission. The address was well received and a committee appointed, which drew up resolutions of thanks and confidence in the State Board of Health and commendation for its excellent work.

Terre Haute.—February 28th. This visit was on account of invitation of the Vigo County Medical Society. Together with Dr. Schweitzer of the Bacteriological laboratory I met the Vigo County Medical Society and read a paper entitled, "The Production and Handling of Diphtheria Antitoxin." Dr. Schweitzer's paper was entitled, "The Epidemiology of Typhoid Fever in Indiana." We were well received, and a special committee presented resolutions, which were unanimously passed, commending the work of the State Board of Health, and thanking the speakers.

Marion.—March 10th. The State Association of Mathematic and Science Teachers, being in session at Marion, invited me to tell them of the work of the State Board of Health, and to lecture upon school sanitation. A large audience was present, entirely filling the lecture room in the Carnegie Library. The lecture was well received. Many questions were asked and answered at the round table which followed. A resolution of thanks was passed.

Boggestown.—March 15th. This visit was made on account of a petition of patrons of the schoolhouse and trustee to make a sanitary survey of the Boggestown schoolhouse. Said survey is presented separately herewith for the action of the Board.

Greencastle.—March 16th. This visit was made on account of the authorities of DePauw University to make a public address before the students. My subject was, "The Hygiene of the Body and the Mind." In this lecture I took the stand that it was first necessary to have a healthy body before the mind could be thoroughly healthy and turn off a healthy product. A resolution of thanks and commendations of the work of the State Board of Health was passed.

Shelbyville.—March 25th. On account of urgent invitation of Dr. Keeney, city health officer, mayor, and chairman of the committee of the city council upon public health, I visited Shelbyville, together with Dr. J. P. Simonds, to make investigation. It was the usual story. Certain doctors in Shelbyville were not competent to diagnose smallpox and had been calling typical smallpox, chickenpox. It seems the disease had appeared two months before in rather marked form. Despite this fact, certain physicians did not know that they were dealing with smallpox, and so no precautions were taken. The infection became quite widespread, and an epidemic has followed. Dr. Simonds and I found five well-defined cases and two cases which had recovered, which were unquestionably smallpox, and had been severe. All proper precautions were ordered and the city authorities were advised to buy vaccine and offer free vaccination.

Ft. Wayne.—March 27th. The City Board of Health of Ft. Wayne decided to put forth extra effort against tuberculosis, and for the purpose of establishing a tent colony. Our tuberculosis exhibit, augmented by a mouth hygiene exhibit, was sent to Ft. Wayne for the week beginning March 27th. It was in charge of Dr. King. The meetings during the week were held in Library

Hall, a large auditorium, which would seat 1,200 people. Lectures were given morning, afternoon and evening for the whole week. I staid for three days. On Monday evening, March 27th, I had a good audience, mostly of women, for the lecture was entitled, "What Can the Women do to Advance Public Hygiene." The following day I lectured to students in the morning, and in the afternoon I ran down by trolley to Bluffton, where in the evening I delivered the usual lecture upon the prevention and cure of tuberculosis. On that night I returned to Ft. Wayne. The forenoon of Wednesday I lectured to a miscellaneous audience upon the general subject of health protection, and in the afternoon lectured to a large audience of school children, showing them the illustrations which set forth the ravages of the fly and exhorting the children in the line of personal hygiene. The lecture for the evening was entitled, "What Can Business Men do to Promote the Public Health?" The audience completely filled the hall and the lecture was well received. I returned Thursday morning, and believe that excellent results will follow our efforts.

The Secretary announced that it was necessary to fix Dr. Wm. F. King's salary, it having been promised that if Dr. King would enter the service of the Board as Assistant Secretary at \$100 that a proper salary would be given him if the Legislature could be induced to give a special appropriation for infectious diseases, he then to take hold of epidemillogical work or such other work as might be specified.

After discussion, Dr. McCoy moved:

The salary of Dr. King should be \$2,000 per annum, payable monthly from the special infectious disease fund of \$5,000.

Seconded by Dr. Davis.

Moved to amend by Dr. Tucker:

That the sum be made \$1,800.

Motion failed.

The President then put the first and original motion by Dr. McCoy, and it was unanimously carried,

ACTION CONCERNING SCHOOLHOUSES.

Sanitary Survey of schoolhouse at Yellowstone, Polk Township, Monroe County, Ind., by Dr. J. P. Simonds, December 1, 1910.

Site.—The schoolhouse is on low ground and there were several small pools of water within a few feet of the door. The road by which we approached the school runs for several miles in the bed of the creek. Just before the schoolhouse is reached, however, the road turns out of the creek and runs around the building. It had rained the night before and the road here was filled with water. The schoolhouse was thus almost completely surrounded by water—the creek on one side and the flooded road on the other. The southeast (?) corner of the building projects five or six feet over the bank of Hunter's Creek, and we were told that the water sometimes got high enough to flood the floor of the schoolroom. The remaining two-thirds of the building is flat on the ground. There are no toilet facilities; the leafless bushes furnish the only meager protection from view to children attending to the "natural calls of nature."

Water Supply.—Water for the school is obtained from a well at a farmhouse about 250 yards distant. This is an ordinary dug well about 25 feet deep. The water is clear, free from odor, and apparently of good quality.

Building.—The school building is built of wood and measures 21 x 19 x 9 feet inside. The entrance is by a double door in the south wall. There are two small windows on each side. (These were not measured, but appeared to be adequate for properly lighting the room.) The floor has several cracks from one-fourth to one-half inch wide, and at the door it is considerably worn.

The blackboards are the painted walls of the room. The room is heated by an ordinary stove, which sits in the middle of the floor. There is no visible means of ventilation.

The total enrollment is 31. This makes an average of 12½ square feet of floor space for each pupil when all are present. The average attendance daily was 22. With this number present the room is badly crowded.

The exceedingly bad location of the building—on such low ground and projecting over the bank of the creek—the entire absence of any toilet facilities, the over-crowding and the lack of any means of ventilation, in my judgment, render the building site unfit for school purposes.

After consideration, the following proclamation of condemnation was adopted and the Secretary ordered to serve the same according to law:

PROCLAMATION OF CONDEMNATION.

Whereas, It has been shown to the satisfaction of the State Board of Health, that the schoolhouse at Yellowstone, Polk Township, Monroe County, Indiana, is unsanitary and consequently threatens the health and lives of the pupils, and also interferes with their efficiency; therefore, it is

Ordered: That said schoolhouse at Yellowstone, Polk Township, Monroe County, Indiana, is condemned for school purposes, and shall not be

used for said school purposes after June 1, 1911, and if any school trustee, or trustees, any teacher or any person uses said schoolhouse for school purposes, or teaches therein after the date mentioned, he or she or they shall be prosecuted.

Any person mutilating or tearing down this proclamation shall be prosecuted.

Passed by the State Board of Health, April 7, 1911.

Sanitary survey of the Newton Stewart School, District No. 9, Jackson Township, Orange County, Ind., by Dr. S. F. Teaford, County Health Commissioner, July 10, 1910.

Site.—Northwest part of town, is high and dry and well drained. Size of grounds, 110 x 140 feet.

Exterior of Building.—The building is a frame structure, covered with shingles, weatherboarded; the door faces the street on the south. Has no basement, and foundation for building consists only of stone pillars, and boards cover space from building to ground between pillars. Has one flue in center of building built of brick, in center of roof. Is heated with stove in center of building, no walks anywhere, roof is fairly good; been in use three or four years.

Interior of Building.—The interior has one room, is a one-story building, ceiling 9 feet high. Walls are ceiled and in fairly good condition, floor is poplar, one thickness, tongued and grooved, fair condition. Windows No. 6 size, 48 x 30 inches, located on east and west as shown in diagram. Number of desks, 24, and in bad condition, are double desks. Number of children, 45. Is heated with one stove in center of room, flue being built from ceiling in center of room.

Outhouses.—Are as shown in diagram at the beginning; they are fairly good structures; have no vaults and no walks leading to them.

Water Supply.—The water is obtained from a neighboring well, dug and walled with stone. The well is in fair condition. It is supplied to children by tin cups and buckets.

Remarks.—This building is about the average for this country, with the exception that it is too small for the number of children attending and should be condemned on this fault. Grounds are too small, but the location is as good as could be found in the town.

After consideration, the following proclamation of condemnation was adopted and the Secretary ordered to serve the same according to law:

PROCLAMATION OF CONDEMNATION.

Whereas, It has been shown to the satisfaction of the State Board of Health that the schoolhouse known as the Newton Stewart School, District No. 9, Jackson Township, Orange County, Indiana, is unsanitary, and consequently threatens the health and life of the pupils, and also interferes with their efficiency, therefore, it is

Ordered: That said schoolhouse known as the Newton Stewart School, District No. 9, Jackson Township, Orange County, Indiana, is condemned for school purposes, and shall not be used for said school purposes after June 1, 1911, and if any school trustee, or trustees, any teacher or any person uses said schoolhouse for school purposes, or teaches therein after the date above mentioned, he or she or they shall be prosecuted.

Any person mutilating or tearing down this proclamation shall be prosecuted.

Passed by the State Board of Health, April 7, 1911.

Sanitary Survey of schoolhouse, District No. 7, Jackson Township, Orange County, Ind., by Dr. S. F. Teaford, County Health Commissioner, July 10, 1910.

Site.—Consists of one acre of ground, high and not well drained. There are two public roads running through grounds, one on north side and the other running diagonally from northeast corner to about the west central line. Ground is mostly covered with small growth of timber. The drainage of the whole ground is to the north or towards the schoolhouse.

Exterior of Building.—The building is a frame structure with shingle roof, flue of brick about the center of building and in center of roof. Walls are weatherboarded, some of it torn away and badly in need of paint. Has no basement. Foundation consists of sandstone, and part of it has fallen out. No walks on grounds; roof is in moderate condition, only being about five years since it was reroofed. The building is about twenty feet from the center of the road on the south.

Building.—Consists of two rooms, one small one, $8\frac{1}{2} \times 22$ feet, at the entrance, partitioned off from the other by board partition, and done so to make the main room smaller so it can be better heated. The schoolroom proper is 22×30 feet in size. Walls are ceiled, a part of it being torn away overhead and on sides. The floor is a single tongued and grooved floor, the boards being spread apart, so floor is open. The walls are smoked and dirty, and floor is very dirty. Number of desks, 30. Number of children enumerated, 22. Condition of desks is bad. Is heated with one stove, which is located near the center of the room. Flue is built from ceiling above and is very dangerous. The walls are leaning and are about 18 inches out of line.

Outhouses.—There are none. I would judge they use the brush as closets. No walks anywhere.

Water Supply.—Is from a neighboring spring and is given children by tin cup and bucket.

Remarks.—I think this is one of the worst school buildings in our country anywhere, and I would recommend the building and grounds both be condemned.

After consideration, the following proclamation of condemnation was adopted and the Secretary ordered to serve the same according to law:

PROCLAMATION OF CONDEMNATION.

Whereas, It has been shown to the satisfaction of the State Board of Health that the schoolhouse, District No. 7, Jackson Township, Orange County, Indiana, is unsanitary, and consequently threatens the health and life of the pupils, and also interferes with their efficiency; therefore, it is

Ordered: That said schoolhouse, District No. 7, Jackson Township, Orange County, Indiana, is condemned for school purposes, and shall not be used for said school purposes after June 1, 1911, and if any school trustee, or trustees, any teacher or any person uses said schoolhouse for school purposes, or teaches therein after the date above mentioned, he or she or they shall be prosecuted.

Any person mutilating or tearing down this proclamation shall be prosecuted.

Passed by the State Board of Health, April 7, 1911.

Sanitary survey of the Brown School, District No. 2, Taylor Township, Howard County, Ind., by Wm. I. Scott, County Health Commissioner, April 6, 1911.

Site.—Is located on the southeast corner of crossroads, its area being about one-half acre of ground, flat and well drained. The site I consider ideal. It is dry. There are no walks, either to the school building or to the outhouses.

Building.—The building sets in about the center of the lot, facing west. Two doors for entrance, but I found one of them nailed up tight, this being necessary, as there was no way of keeping it closed. The south door was the one by which I gained entrance. The steps leading up to the doors are dilapidated, some of the boards missing and the others broken. It is a one-story, one-room, brick, shingle-roof building. Foundation of stone. No basement. The southwest corner of foundation and a part of wall is caving in and badly cracked. Other parts of foundation cracked and open. The outside measurement of building is 31 x 26 feet. Three windows on south side and three on north side, each measuring 3 x 6 feet. One layer of brick is entirely missing from under the windows. Leading from the two doors on the west side up to the roof are two open cracks in the wall. In the east wall is another crack running from about the center of the wall to the roof, this crack runs the course of a chimney. Chimneys are very dilapidated and look to be unsafe. The roof is old and leaky.

Interior of Building.—Upon entering the building I found large cracks around the doors. The interior measurements of room, 24 x 29 feet. The floor is old, worn and very unsanitary. The walls are cracked, showing that the cracks described on outside of building go entirely through. The blackboards at one time were painted black, but are now worn and cracked, except the east board behind the teacher's desk, which has been covered with some sort of cardboard. There are thirty-four old-fashioned seats. They have enrolled 28 pupils, with an average attendance of 26 for the year. The sickness has mostly been colds, was the teacher's statement. Room heated with stove placed in center of the room, with galvanized tin

hood around. The roof has leaked, letting water run down the stovepipe, leaving it in a rusty, unsafe condition.

Outhouses.—These are dilapidated old shacks, and the one for boys especially in bad condition. These are not dug vaults, just on top of the ground, the boys' being full and running over the seats.

Water Supply.—Is obtained from drilled well fitted with iron pump, located in front of the building.

After consideration, the following proclamation of condemnation was adopted and the Secretary ordered to serve the same according to law:

PROCLAMATION OF CONDEMNATION.

Whereas, It has been shown to the satisfaction of the State Board of Health that the schoolhouse known as the Brown School, District No. 2, Taylor Township, Howard County, Indiana, is unsanitary, and consequently threatens the health and life of the pupils, and also interferes with their efficiency; therefore, it is

Ordered: That said schoolhouse, Brown School, District No. 2, Taylor Township, Howard County, Indiana, is condemned for school purposes, and shall not be used for said school purposes after June 1, 1911, and if any school trustee, or trustees, any teacher or any person uses said schoolhouse for school purposes, or teaches therein after the date above mentioned, he or she or they shall be prosecuted.

Any person mutilating or tearing down this proclamation shall be prosecuted.

Passed by the State Board of Health, April 7, 1911.

Report of sanitary inspection of Charlottesville Schoolhouse, District No. 12, Jackson Township, Hancock County, by C. A. Carter, March 25, 1911.

Site.—The site is a two-acre tract of land lying north of national road in the eastern end of the village of Charlottesville. The present school building is located 260 feet from said national road, on an elevation 15 feet above the road level. There is a gradual incline toward the south. The ground trend is south and west. There is a low place in the southwest corner of the grounds, and when there is a hard rain, the water backs upon the ground from a ditch along the roadway, but is soon carried away. The water does not affect the building in any way. Gravel walks lead up to and around the building.

Water is supplied from a well 54 feet deep. I was informed by the custodian the well was dug 22 feet and driven 32 feet. The outhouses are located 40 feet north of the building and 60 feet from this well, which is on lower ground.

Building.—Is two stories, with stone foundation, erected in 1886. It contains four rooms, 24 x 24, with a vestibule facing south, two stories, 15 x 14. The walls on west side of building are cracked, extending from upper to lower window on south side of the west wing. The eavestrough

shows indications of leakage. Down-spout on north side is broken, all the windows on lower floors are covered with wire nettings.

The entrance to the building is through double doors into vestibule, 15 x 14; a winding stairway leads from here to upper floor.

Room No. 1.—West side lower floor is 24 feet square; 28 pupils occupy this room. It is lighted by five windows, four lights in each window, 14 x 44, two on the north and west, one on the south. A small cloakroom leading into the vestibule is located east of this window. Heat is supplied from a hot-blast stove. The plastering and floors are bad. There is no means of ventilation.

Room No. 2.—East side, contains 43 single seats with 40 pupils. This room is lighted by five windows, two on north and east and one on south. The windows are the same size as in Room No. 1. A small cloakroom is on south and west of window. Heated by hot-blast stove; no ventilation.

The upper story is reached by a winding stairway, 20 steps, 7 inches wide on the turn and 14 inches up, 3½ feet wide.

Room No. 3.—East side, is lighted the same as No. 2, which is directly below; 34 pupils occupy this room. Heated by hot-blast stove; no ventilation. This is the best lighted room of any in the building.

Room No. 4.—Located on west side of building, is the same size as No. 1, directly below, and is lighted the same. Heated by hot-blast stove; no ventilation. Forty desks in this room with 43 pupils. Plastering in bad condition and shows evidence of leakage. The floors are bad and a sudden jar or heavy walking will shake the windows.

A small classroom 12 x 18, containing 17 seats, is located on second floor of vestibule, lighted by two windows on the south; there is no chimney in this room and is heated by small stove with the pipe extending through the window. In case of a fire the pupils in this room and Nos. 3 and 4 would have to make their exit into a small hallway 4 feet wide to reach the stairway. The doors leading to these rooms are almost opposite each other.

After consideration, the following proclamation of condemnation was adopted and the Secretary ordered to serve the same according to law:

PROCLAMATION OF CONDEMNATION.

Whereas, It has been shown to the satisfaction of the State Board of Health that the schoolhouse at Charlottesville, District No. 12, Jackson Township, Hancock County, Ind., is unsanitary, and consequently threatens the health and life of the pupils, and also interferes with their efficiency; therefore, it is

Ordered: That said schoolhouse at Charlottesville, District No. 12, Jackson Township, Hancock County, Ind., is condemned for school purposes, and shall not be used for said school purposes after June 1, 1911, and if any school trustee, or trustees, any teacher or any person uses said schoolhouse for school purposes, or teaches therein after the date above mentioned, he or she or they shall be prosecuted.

Any person mutilating or tearing down this proclamation shall be prosecuted.

Passed by the State Board of Health, April 7, 1911.

Sanitary survey of schoolhouse at New Salem, District No. 4, Noble Township, Rush County, by J. N. Hurty, April 3, 1911.

Site.—About one-half acre, perhaps a little more, and is low and wet. The hole should be filled, and the land leveled up and drained if used in the future, but a larger site should be purchased. Noisome outhouses with walks leading to them.

Building.—Is of brick, two stories, stone foundation, no basement. Heated by stoves. Four rooms. Walls are thin. Narrow boxed stairway leading from small, cold hall. The hall is 9 x 10 feet. The stairway has two turns and is very frail, for it shakes with the weight of one man.

High School Room.—Is up stairs, 30 x 25 x 12 feet. Enrollment, 30; average attendance, 95 per cent. Space is ample. Floor is in medium condition. Walls are papered, ceiling is cracked. Slate blackboards. Room is lighted from three sides and is sufficient.

Seventh and Eighth Grades.—Up stair room 30 x 25 x 14 feet. Enrollment, 26; 24 average attendance. Thirty-four seats, some adjustable. Slate blackboards. Wall papered, in good condition; floor, medium. Lighted by seven windows from three sides; light is ample.

Intermediate Room.—This room is down stairs, 30 x 25 x 14 feet. Enrollment, 28; average attendance, 26; 33 seats. Walls papered and in good condition. Slate blackboards. Floor bad. Desks good, some being adjustable. Light is from seven windows on three sides and is sufficient.

Primary Room.—30 x 25 x 14 feet. Twenty-one pupils; seats for 36 pupils; space is ample. Walls papered and in good condition. Slate blackboards, floor medium. Light admitted from three sides from seven windows, and is ample in amount.

Water.—Supplied from driven well. Said by trustee not to be good.

Opinion and Recommendation.—In my opinion this schoolhouse is not fit for school purposes, being very insanitary, old and unfit in every way. I recommend that it be condemned.

After consideration, the following proclamation of condemnation was adopted and the Secretary ordered to serve the same according to law:

PROCLAMATION OF CONDEMNATION.

Whereas, It has been shown to the satisfaction of the State Board of Health that the schoolhouse at New Salem, District No. 4, Noble Township, Rush County, Indiana, is unsanitary and consequently threatens the health and life of the pupils, and also interferes with their efficiency; therefore, it is

Ordered: That said schoolhouse at New Salem, District No. 4, Noble Township, Rush County, Indiana, is condemned for school purposes, and shall not be used for said school purposes after June 1, 1911, and if any school trustee, or trustees, any teacher or any person uses said schoolhouse for school purposes, or teaches therein after the date above mentioned, he or she or they shall be prosecuted.

Any person mutilating or tearing down this proclamation shall be prosecuted.

Passed by the State Board of Health, April 7, 1911.

Sanitary survey of schoolhouse at Boggstown, Indiana, District No. 3, Sugar Creek Township, Shelby County, by J. N. Hurty, March 15, 1911.

Site.—Is about three-fourth of an acre of land. Several depressed places. Land wet and undrained. Flat stone walk leads from street and around both sides of the schoolhouse to the outhouses. Outhouses are of the usual kind, built on the outside of schoolhouses, with vaults, frame and noisome.

Building.—Brick, two stories, no basement, stone foundation. Walls cracked in two places. The hall is small. Upper floor is reached by narrow boxed stairway with two turns in it. No cloakrooms. Heated by stoves.

High Schoolroom.—18 x 24 x 14 feet. Fourteen pupils. The space, therefore, is ample. Floor bad, walls bad. Tongued and grooved ceiling full of cracks; paper coming off in places. Desks are old, much marred and dirty. Light by four windows from two sides, eight panes to each window, each pane 20 x 15 inches.

Intermediate Room, 26 x 30 x 14 feet. Six windows, two on the east, two on the north, and two on the south. Floor is bad. Walls are bad. Painted blackboards.

Primary Room.—Is on the first floor, 30 x 30 x 11 feet. Six windows, same size as in the intermediate room. Floor is bad. Tongued and grooved ceiling.

Water Supply.—Is from a well, and is said to be bad, and probably is.

Opinion and Recommendation.—In my opinion this schoolhouse is insanitary and unfit for school purposes, and I recommend that it be condemned.

After consideration, the following proclamation of condemnation was adopted and the Secretary ordered to serve the same according to law:

PROCLAMATION OF CONDEMNATION.

Whereas, It has been shown to the satisfaction of the State Board of Health that the schoolhouse at Boggstown, District No. 3, Sugar Creek Township, Shelby County, Indiana, is unsanitary and consequently threatens the health and life of the pupils, and also interferes with their efficiency; therefore, it is

Ordered: That the said schoolhouse at Boggstown, District No. 3, Sugar Creek Township, Shelby County, Indiana, is condemned for school purposes, and shall not be used for said school purposes after June 1, 1911, and if any school trustee, or trustees, any teacher or any person uses said schoolhouse for school purposes, or teaches therein, after the date above mentioned, he or she or they shall be prosecuted.

Any person mutilating or tearing down this proclamation shall be prosecuted.

Passed by the State Board of Health, April 7, 1911.

Sanitary survey of schoolhouse, District No. 10, White River Township, Randolph County, Ind., by G. C. Markle, M. D., County Health Commissioner, March 8, 1911.

Site.—Is on a lot 129 x 50 x 70 x 78 x 102 feet. This lot is sloping and naturally well drained.

Building.—Frame building 23 x 29 x 12 feet. Looks old and dilapidated. No basement, and roof leaks badly. Paper hanging in ribbons from ceiling. Plastering discolored in many places. Walls in fair condition. Blackboards good. Desks good. No ventilation except door and windows.

Outhouses.—Old and dilapidated. They have screens. No fence between them. No walks, no trees, no well. Carry water from neighbor's dug well.

Remarks.—This building is undoubtedly unsanitary and should be condemned for school purposes after January 1, 1912.

After consideration, the following proclamation of condemnation was adopted and the Secretary ordered to serve the same according to law:

PROCLAMATION OF CONDEMNATION.

Whereas, It has been shown to the satisfaction of the State Board of Health that the schoolhouse, District No. 10, White River Township, Randolph County, Indiana, is unsanitary and consequently threatens the health and life of the pupils, and also interferes with their efficiency; therefore, it is

Ordered: That said schoolhouse, District No. 10, White River Township, Randolph County, Indiana, is condemned for school purposes, and shall not be used for said school purposes after June 1, 1911, and if any school trustee, or trustees, any teacher or any person uses said schoolhouse for school purposes, or teaches therein, after the date mentioned, he or she or they shall be prosecuted.

Any person mutilating or tearing down this proclamation shall be prosecuted.

Passed by the State Board of Health, April 7, 1911.

Sanitary survey of schoolhouse, District No. 11, White River Township, Randolph County, Ind., by Dr. G. C. Markle, County Health Commissioner, March 8, 1911.

Site.—On a well drained, grassy lot 119 x 257 feet. No trees.

Building.—Frame building 23 x 29 x 12 feet. Tight pine floor. No cloak room. Building looks old and dilapidated. Roof leaks. No basement. Walls in good condition. Good blackboards. Good desks. Well ventilated by two holes in the south wall about 8 feet from the floor, draws air from the outside near the ground.

Outhouses.—Old and dilapidated. Have screens. No fence between. No walks.

Water Supply.—No well. Carry water from a dug well.

Remarks.—This building and outbuildings are undoubtedly unsanitary and should be condemned for school purposes after January 1, 1912.

After consideration, the following proclamation of condemnation was adopted and the Secretary ordered to serve the same according to law:

PROCLAMATION OF CONDEMNATION.

Whereas, It has been shown to the satisfaction of the State Board of Health that the schoolhouse District No. 11, White River Township, Randolph County, Indiana, is unsanitary, and consequently threatens the health and life of the pupils, and also interferes with their efficiency; therefore, it is

Ordered: That the said schoolhouse, District No. 11, White River Township, Randolph County, Indiana, is condemned for school purposes, and shall not be used for said school purposes after June 1, 1911, and if any school trustee, or trustees, any teacher or any person uses said schoolhouse for school purposes, or teaches therein, after the date above mentioned, he or she or they shall be prosecuted.

Any person mutilating or tearing down this proclamation shall be prosecuted.

Passed by the State Board of Health, April 7, 1911.

Sanitary survey of schoolhouse, District No. 12, White River Township, Randolph County, Ind., by G. C. Markle, M. D., County Health Commissioner, March 8, 1911.

Site.—Situated on a high, well drained, grassy lot, 100 x 182 feet. No trees.

Building.—Frame building 25 x 35 x 12 feet, with 7½ x 25 feet cloak-room. Building looks old. Roof in good condition. No basement. Walls in good condition. Good blackboards. Good desks. No ventilation.

Outhouses.—Dilapidated and unsanitary. Have screens, but no walks.

Water Supply.—Driven well. Wooden drain from well.

This building has crosslight and no ventilation. Can't keep warm in winter.

Remarks.—I would recommend that District No. 12 be condemned for school purposes after January 1, 1912.

After consideration, the following proclamation of condemnation was adopted and the Secretary ordered to serve the same according to law:

PROCLAMATION OF CONDEMNATION.

Whereas, It has been shown to the satisfaction of the State Board of Health that the schoolhouse, District No. 12, White River Township, Randolph County, Indiana, is unsanitary, and consequently threatens the

health and life of the pupils and also interferes with their efficiency; therefore, it is

Ordered: That the said schoolhouse, District No. 12, White River Township, Randolph County, Indiana, is condemned for school purposes, and shall not be used for said school purposes after June 1, 1911, and if any school trustee, or trustees, any teacher or any person uses said schoolhouse for school purposes, or teaches therein, after the date above mentioned, he or she or they shall be prosecuted.

Any person mutilating or tearing down this proclamation shall be prosecuted.

Passed by the State Board of Health, April 7, 1911.

Sanitary survey of schoolhouse No. 11, West River Township, Randolph County, Ind., by Dr. G. C. Markle, County Health Commissioner, March 24, 1911.

Site.—Lot, one acre of ground. High, grassy and natural drainage. No trees. Dug well, pump broken. Carry water from a dug well.

Outhouses and Woodshed.—Dilapidated and unfit for use.

Building.—Frame building 25 x 35 x 10 feet. Old and dilapidated. Impossible to keep building at 70 degrees in zero weather. Thirty-eight desks, facing east. Desks in bad condition.

Pupils all drink out of one bucket and the same tincup. No walks; in fact, nothing in first-class condition.

Remarks.—The schoolhouse and outbuildings are undoubtedly unsanitary and unfit for school purposes, and I recommend that they be condemned.

After consideration, the following proclamation of condemnation was adopted and the Secretary ordered to serve the same according to law:

PROCLAMATION OF CONDEMNATION.

Whereas, It has been shown to the satisfaction of the State Board of Health that the schoolhouse, District No. 11, West River Township, Randolph County, Indiana, is unsanitary, and consequently threatens the health and life of the pupils, and also interferes with their efficiency; therefore, it is

Ordered: That the said schoolhouse, District No. 11, West River Township, Randolph County, Indiana, is condemned for school purposes, and shall not be used for said school purposes after June 1, 1911, and if any school trustee, or trustees, any teacher or any person uses said schoolhouse for school purposes, or teaches therein, after the date above mentioned, he or she or they shall be prosecuted.

Any person mutilating or tearing down this proclamation shall be prosecuted.

Passed by the State Board of Health, April 7, 1911.

Sanitary survey of schoolhouse at Arcadia, Jackson Township, Hamilton County, Ind., by Dr. W. F. King, Assistant State Health Commissioner, February 24, 1911.

Site.—The site on which this building stands is condemned by the rules of the State Board of Health for the reason that it is within fifty feet of the Indiana Union Traction Company's railroad track on one side and within probably 300 feet of the Lake Erie and Western and Pennsylvania Railroad tracks on the other side.

Building.—The building itself is old and very much out of repair, with the exception of two rooms, one of which is used as an assembly room for the high school, which has been added to the building within recent years. The rooms are all badly lighted, the light being insufficient and coming from two sides of the room. The building is heated by furnaces with gravity ventilation and both heating and ventilation are bad. The floors and walls, especially in the old part of the building, are in bad condition.

A new building is badly needed, and it is certainly poor economy to surround the children of Arcadia with such conditions.

Recommendations.—It is recommended that a condemnation order be issued against this building, the same to take effect June 1, 1911, and that the condemnation order apply not only to the school building itself, but to the schoolhouse site, on account of its location with reference to the railroads above mentioned.

After consideration, the following proclamation of condemnation was adopted and the Secretary ordered to serve the same according to law:

PROCLAMATION OF CONDEMNATION.

Whereas, It has been shown to the satisfaction of the State Board of Health the schoolhouse at Arcadia, Jackson Township, Hamilton County, Indiana, is unsanitary, and consequently threatens the health and life of the pupils, and also interferes with their efficiency; therefore, be it

Ordered: That the said schoolhouse at Arcadia, Jackson Township, Hamilton County, Indiana, is condemned for school purposes, and shall not be used for said school purposes after June 1, 1911, and if any school trustee, or trustees, any teacher or any person uses said schoolhouse for school purposes, or teaches therein, after the date above mentioned, he or she or they shall be prosecuted.

Any person mutilating or tearing down this proclamation shall be prosecuted.

Passed by the State Board of Health, April 7, 1911.

Sanitary survey of the Kingston schoolhouse, Fugit Township, Decatur County, Ind., by Dr. D. W. Weaver, County Health Commissioner, July 26, 1910.

Building.—The building is an old brick one, built possibly thirty or forty years ago. The walls are apparently good yet, but when one walks

on the upper floor it shakes and the windows in the upper room, as well as the ones on the north side of lower room, rattle. From this fact it would appear that the house is unsafe, especially during storms. The house contains one room and hall on ground floor and one room and hall upon second floor. The hall is upon the east with the two rooms facing toward it. Room upon lower floor is as follows: Ceiling is painted with a dark green, glazed paint. Side walls are painted an olive green. Throughout, the painting gives a dingy effect. Floor is worn badly. Stove is an unprotected wood stove, near the rear of the room, and has the stovepipe run to within a foot of the ceiling and then runs forward to the chimney in the hall partition. Desks, 29 single ones, are disreputable. Blackboard at the front of room is paper and in bad condition. Slate board in the rear is good. Windows, three on each side, with glass $2\frac{1}{2} \times 6\frac{1}{2}$ feet.

Upper Room.—Ceiling is painted light green (shiny). Floor worn out and dirty. Desks, 19, are old. Slate boards in front and back in good condition. Hall looks worn and bannister upstairs is unsafe. Stairs and hall proportions as well as lighting is fair.

Remarks.—I would recommend the condemnation of the schoolhouse in its present condition, upon the following specific grounds:

First.—Because the building is unsafe during high winds.

Secondly.—The uniform heating is impossible with the present unprotected wood stoves.

Thirdly.—The lighting is faulty and insufficient. The desks are worn. The floor is worn. The window frames are loose and decayed. The bannister is unsafe.

I would recommend a remodeling of the present building or the building of a new schoolhouse.

After consideration, the following proclamation of condemnation was adopted and the Secretary ordered to serve the same according to law:

PROCLAMATION OF CONDEMNATION.

Whereas, It has been shown to the satisfaction of the State Board of Health that the Kingston Schoolhouse, Fugit Township, Decatur County, Indiana, is unsanitary, and consequently threatens the health and life of the pupils, and also interferes with their efficiency; therefore, it is

Ordered: That the said schoolhouse at Kingston, Fugit Township, Decatur County, Indiana, is condemned for school purposes, and shall not be used for said school purposes after June 1, 1911, and if any school trustee, or trustees, any teacher or any person uses said schoolhouse for school purposes, or teaches therein, after the date above mentioned, he or she or they shall be prosecuted.

Any person mutilating or tearing down this proclamation shall be prosecuted.

Passed by the State Board of Health, April 7, 1911.

Report of inspection of school buildings at Thorntown, Indiana, by Dr. W. F. King, Assistant County Health Commissioner, March 9, 1911.

In response to a petition from a number of patrons, I made a sanitary inspection of the two school buildings at Thorntown, Indiana, March 9, 1911.

The grade building was constructed in 1883, the high school building in 1894. Both buildings are heated and ventilated by the Smeade system. This system, which is always ineffective, is unusually bad in the case of the Thorntown buildings on account of the foul air ducts from the rooms leading first into the toilet incinerators instead of leading directly into the vent stacks. It was shown by anemometer test that in the vent openings in the classrooms, the movement of air was from the openings into the rooms fully as much as from the rooms outward. It is plain that when the movement of air is inward, the air must first come through the toilets, which explains the frequent vile odor noticeable in the classrooms. The same conditions are found in both buildings. In the high school building, in addition to the bad ventilation, the classrooms are crowded. In one room the capacity is but $10\frac{1}{2}$ cubic feet per pupil, while no room has the minimum standard of 225 cubic feet. In the opinion of the inspector, conditions could hardly be worse. It is recommended that a "blower" system of ventilation should be installed in these buildings before the opening of another school year. This change is absolutely essential. On the other hand, if possible, both buildings should be completely remodeled with reference to light, heating, ventilation, sanitary sewerage, water supply, and safety, by changing stairways, particularly in the grade building.

In this building the stairways are forty-two inches wide with six short turns between the third floor and outside exits, and four turns between the second floor and the exits. The building is not provided with fire escapes. In the high school building the public auditorium on the third floor should be changed to an assembly room for the high school, while the present assembly room on the second floor should be changed into classrooms in order to relieve the overcrowded condition of the school.

The school board of Thorntown should begin at once to decide on plans to bring about the changes above recommended before the beginning of school next year. Much of the money now being expended by the citizens of Thorntown in their public schools is being worse than wasted, while the loss to the school children of the town in energy and vitality, by reason of the bad conditions with which they are surrounded, can not be estimated. The present buildings are not only inefficient but positively injurious. To continue to use them as they are now is bad business and the worst sort of economy.

After consideration, the following proclamation of condemnation was adopted and the Secretary ordered to serve the same according to law:

PROCLAMATION OF CONDEMNATION.

Whereas, It has been shown to the satisfaction of the State Board of Health that the high school building, Thorntown, Sugar Creek Township, Boone County, Indiana, is unsanitary, and consequently threatens the health and life of the pupils, and also interferes with their efficiency; therefore, it is

Ordered: That the said high school building, Thorntown, Sugar Creek Township, Boone County, Indiana, is condemned for school purposes, and shall not be used for said school purposes after June 1, 1911, and if any school trustee, or trustees, any teacher or any person uses said schoolhouse for school purposes, or teaches therein, after the date above mentioned, he or she or they shall be prosecuted.

Any person mutilating or tearing down this proclamation shall be prosecuted.

Passed by the State Board of Health, April 7, 1911.

PROCLAMATION OF CONDEMNATION.

Whereas, It has been shown to the satisfaction of the State Board of health that the grade schoolhouse, Thorntown, Sugar Creek Township, Boone County, Indiana, is unsanitary, and consequently threatens the health and life of the pupils, and also interferes with their efficiency; therefore, it is

Ordered: That the said grade schoolhouse, Thorntown, Sugar Creek Township, Boone County, Indiana, is condemned for school purposes, and shall not be used for said school purposes after June 1, 1911, and if any school trustee, or trustees, any teacher or any person uses said schoolhouse for school purposes, or teaches therein, after the date above mentioned, he or she or they shall be prosecuted.

Any person mutilating or tearing down this proclamation shall be prosecuted.

Passed by the State Board of Health, April 7, 1911.

At this point President McCoy being compelled to leave for home, asked to be excused and that the new President, Dr. Wishard, be installed, and that he preside for the remainder of the session. This was consented to, and Dr. Wishard took the chair. He thanked the Board for the honor conferred, and called for any further business to be attended to.

Dr. Hurty asked for a leave of absence for about twelve days to go to Knoxville, Tenn., April 13-14, to address the Tennessee Teachers' Association upon hygiene, and after that to go on to Jacksonville, Florida, to address the Conference of Education in the South, April 21-22. Permission was given.

There being no further business the Board adjourned.

REGULAR MEETING.

JULY 28, 1911.

Minutes of the regular meeting of the Indiana State Board of Health, held July 28, 1911. This meeting was to close up the business of the third quarter of the fiscal year and the second quarter of the calendar year, both ending June 30, 1911.

Present: Drs. Davis, Tucker, Boyers, Hicks, Hurty.

Called to order by Vice-President Tucker, who announced the first order of business to be to elect a President to fill out the unexpired term of Dr. W. N. Wishard, resigned, which term would expire April 14, 1913.

Dr. Davis nominated Dr. F. A. Tucker, seconded by Drs. Hicks and Boyers. Dr. Tucker was unanimously elected. President Tucker thanked the Board for the honor conferred and assumed the chair.

The President announced it was in order to make nominations for Vice-President. Dr. Boyers nominated Dr. Davis, seconded by Dr. Hicks. Dr. Davis was unanimously elected Vice-President to fill out the unexpired term of Dr. Tucker, ending April 14, 1913.

The minutes of the special meeting, held April 7, 1911, was read and approved in each separate part and as a whole.

REPORT OF SECRETARY FOR THE CALENDAR QUARTER ENDING
JUNE 30, 1911.

The reports of all the departments show that the work and affairs of the State Board of Health are progressing satisfactorily. Under Mr. H. E. Barnard, the pure food and drug department has risen to a position of high esteem among the people on account of its excellent accomplishment and its intelligent conduct. Reference to the monthly reports will give a full and complete idea of what all the departments have accomplished. These reports are published monthly in the bulletin and will be assembled for the annual report. The State Laboratory of Hygiene, Dr. J. P. Simonds superintendent, is doing a work of which the State Board may be proud. The monthly reports of this laboratory show with what intelligence and effectiveness it is conducted. Reference to these monthly reports published in the bulletin of the Board will dis-

cover a detailed account of the work done therein. The statistical department, under the direction of Dr. Chas. A. Carter, is doing better work daily. It is certainly true that in the matter of vital statistics, the Indiana State Board of Health stands second to no other Board in the country. Our records of death are accurate to within 1 per cent., and records of births are becoming better and better all the time; especially is this true since the passage of the ophthalmia neonatorum law, which now requires that all births shall be reported within thirty-six hours after occurrence. We have letters and verbal reports which show that this law is working well. The better class of physicians did not need this law to urge them on to a careful care of the eyes of the new born, nor yet to the matter of making prompt reports. The law was needed solely for that small delinquent class which, to the regret of all, is found in the medical profession. The year 1910 completes ten years of accurate vital statistics in Indiana. The statistical tables for 1910 are now complete, and the Secretary expects to commence their study very soon with the view of making an analysis of the same for the report of that year. It was intended to give a review of these tables in this report, but it has been found impossible to do so. The correspondence of the Board for the quarter has been carefully attended to, and it is to be remarked that the correspondence grows larger each quarter. The people better understand the usefulness of the State Board of Health and appeal to it continually for advice and direction in public health matters. Dr. William F. King, as epidemiologist for the Board, has commenced a special study of poliomyelitis. Special instructions have been prepared and sent out to the medical profession, a spot map is kept, and every point of the study of the disease possible is being closely attended to.

VISITS OF THE SECRETARY.

Fewer visits than usual were made by the Secretary during the quarter. Only five such are to be recorded. In April, with the permission of the Board, the Secretary visited Knoxville, Tennessee, Charleston, South Carolina, and Jacksonville, Florida, being invited by the school authorities and associations to make addresses upon the work of the State Board of Health of Indiana. At Knoxville, the Secretary was cordially received by the Tennessee Teachers' Association, with about 400 in attendance. At Charleston, South Carolina, the teachers' association of that State met

with about 200 in attendance. At Jacksonville, Florida, the Secretary addressed "The Conference for Education in the South." This is the southern organization of all the Southern States, and it meets annually in some selected southern city. The work of the Indiana State Board of Health, especially as it relates to school hygiene, was presented by the Secretary and the address was well received, as was evidenced by the vote of thanks which was given.

Crawfordsville.—May 3. This visit was made upon invitation of the city council and the city board of health of Crawfordsville in order to investigate and confer in regard to the new proposed water supply. The Crawfordsville Water Company proposed to increase its supply by dug wells in a gulley known as the Janey Jones Hollow. As this hollow lies in such a position as to certainly receive much of the underground drainage of the city of Crawfordsville, the city board of health objected. The facts and details of this whole matter have heretofore been presented.

Chicago, on Account of Child's Welfare Exhibit.—On May 17th and 18th the Secretary, according to permission from the State Board, visited the Child's Welfare Exhibit at Chicago. This exhibit has been so thoroughly described in the newspapers that it is deemed unnecessary to take the time to do so here. This exhibit marks an era in public health work in the United States. The first Child's Welfare Exhibit was held in New York and was moved to Chicago and there it was doubled in size. It seems only necessary to say that every possible phase of the child's welfare was fully set forth. The great coliseum at Chicago was entirely filled with the exhibit. The different schools of Chicago from day to day were dismissed, and the children were brought in to consider and learn what they could from the exhibit. The Secretary wishes to say that he learned much from his visit, took copious notes and expects to practically apply what he can in the health affairs of the State.

Culver.—May 23. This visit was made upon invitation of Major Gignilliat, commandant of the military school. The object was to make the students there acquainted with the work of the State Board of Health and also to give some lectures upon personal hygiene. Upon arrival I was received by the commandant and, in all, three lectures were delivered. One of them was of a popular nature, and, as just said, told of the work of the State Board of Health, and the other two were to classes and pertained to personal hygiene.

Danville.—June 16. This visit was made upon invitation of the Danville Commercial Club, who extended an invitation to the Secretary to talk upon municipal hygiene. There was a large audience and good attention. The importance of a sewer system for Danville was thoroughly discussed, the question being before the people, and it was pointed out that the procedure would be for the city to employ a trained and skilled sanitary engineer to lay out the city in a comprehensive system of sewers and then have the city to build them gradually as it could. Statistics were given of cities which had put in sewers and profited in consequence by a lower sick rate and a lower death rate. The Commercial Club passed a vote of thanks, including a vote of confidence in the State Board of Health.

Conference of State and Provincial Boards of Health at Los Angeles, June 25 to 30. According to instructions of the State Board of Health, the Secretary attended the Conference of State and Provincial Boards of Health, which held its annual meeting at Los Angeles at the same time of the annual meeting of the American Medical Association. In the section upon Preventive Medicine and Public Health, eighteen papers were read upon different phases of the public health question. The chairman was Dr. William A. Evans, ex-health commissioner of Chicago, who had arranged for a public health exhibit which was in every way a success. The exhibit of the Indiana State Board of Health pertained entirely to tuberculosis in Indiana. The said exhibit presented the statistics of tuberculosis, also pictures and data concerning the State hospital for consumptives and the anti-consumption work that is being done in South Bend, Terre Haute, Evansville, Lafayette and Indianapolis. The exhibit was favorably commented upon and received favorable mention in the report of the committee to the section.

The Conference of State and Provincial Boards of Health, under the presidency of Dr. H. M. Bracken of St. Paul, was held Friday and Saturday, June 30 and July 1, in the audience room of the Alexandria Hotel. The program consisted of reports from the various States in regard to the progress in hygiene and sanitation, and also reports from special appointed committees by the chairmen upon special subjects. Your Secretary presented a report upon railway sanitation, which was received, and which will be printed in the proceedings of the conference. Thirty-two States were represented.

At San Francisco, the now world famous rat laboratory of the Public Health and Marine Hospital Service was visited. Much space could be given to a description of this laboratory, but it sufficeth to say that there is nothing like it in the world and that through the laboratory work of the United States authorities and through their most consummate management plague has been completely eradicated from San Francisco. For two years the daily examination of rats has failed to discover a single one that was infected. Of 120 squirrels which were killed and brought in within thirty days, two were found infected with plague. Regular rat catchers are employed in San Francisco. They employ every means for catching rats which ingenuity can devise. They have tried introducing disease among the rats, but so far have failed to secure any results worthy of consideration. Each morning every rat of the "catch" is thrown into a solution of corrosive sublimate in order to kill any fleas or other insects upon them and also as a partial preservative. They are then nailed on shingles and upon dissection, if the least microscopical lesion or departure from health appears, the animal is thoroughly examined by microscopical methods, otherwise it is cremated. While at San Francisco I also visited the public health department with Dr. William C. Woodward, health officer of Washington, D. C. We found this department most intelligently and energetically conducted. Many good points in municipal hygiene were noted and the same will from time to time be suggested to the municipal officers of Indiana.

From San Francisco I went to Portland as a guest of the Oregon State Medical Society which met in Portland July 10, 11 and 12. The speakers were all from outside of the State of Oregon. Among them was Dr. Mazyck Ravenel of the University of Wisconsin; Dr. Martin B. Tinker, Medical Department of Cornell University; Dr. William Welch of Johns Hopkins, Dr. W. J. Butler of Chicago and Dr. J. N. Hurty of Indianapolis. The attendance was 273. The attention was most excellent and so were the discussions. I regard this experience as most profitable and beneficial in all respects.

On July 12 I began my homeward journey, stopping two days at Seattle, two days at Laggon in Canada and two days at Minneapolis. The stops at Laggon and Banff were to enjoy a rest from the strenuous work which I had been doing in performing committee work, making lectures, etc. At Minneapolis I visited the Institute of Hygiene, which is under the direction of Dr. F. F. West-

brook. There I met Dr. Bracken and Dr. Ravenel and others. I think it would be wise for the Indiana State Board of Health to recommend to the Governor and the Assembly the creation of an Institute of Hygiene in Indiana modeled after that which exists in Minnesota.

VITAL STATISTICS.

The following tables show the status of smallpox and typhoid fever for the second quarter:

SMALLPOX.

	Number Cases Reported.	Number Deaths.	Number Homes Invaded.
April, 1910.....	81	0	18
April, 1911.....	202	0	28
May, 1910.....	89	0	14
May, 1911.....	207	0	22
June, 1910.....	75	0	23
June, 1911.....	90	0	16
Total, 1910.....	245	0	55
Total, 1911.....	419	0	64

TYPHOID FEVER.

	Number Cases Reported.	Number Deaths.	Number Homes Invaded.
April, 1910.....	112	32	32
April, 1911.....	135	40	26
May, 1910.....	92	26	33
May, 1911.....	134	29	39
June, 1910.....	91	27	31
June, 1911.....	138	29	42
Total, 1910.....	295	85	96
Total, 1911.....	407	98	107

Ordered: That the Secretary's report for the quarter ending June 30, 1911, be accepted and spread of record.

RABIES RULES.

After consideration the following rules were adopted in each separate part and as a whole:

Rule 1. Any person applying to the State Board of Health for free treatment for the prevention of hydrophobia shall be required to furnish a certificate from the health officer in whose jurisdiction the said person received the bite or injury and the reasons why such preventive treatment is deemed necessary. The certificate shall further state that in the opinion

of the health officer granting such certificate, the applicant has no visible or known means with which to pay for the Pasteur preventive treatment.

Rule 2. Any person applying to the State Board of Health for free treatment for the prevention of hydrophobia, shall be required also to furnish a certificate from the trustee of the township in which such said person resides, which certificate shall state that said person was a resident of that township at the time the bite or injury was received, and that such person is an indigent person or unable to pay for or procure the Pasteur preventive treatment.

Rule 3. Whenever in the opinion of the Secretary of the State Board of Health, a person applying for treatment as provided above has complied with the rules of the State Board of Health, in regard to such treatment, the Secretary of the State Board of Health shall cause such person to be given the Pasteur treatment at such place and by such physician or physicians as in the opinion of said Secretary will insure to the applicant the best treatment at the least expense compatible with said approved treatment, and shall authorize the payment of all necessary expenses by reason of said treatment.

Rule 4. Whenever in the opinion of the Secretary of the State Board of Health, it shall be necessary that the applicant for treatment, said applicant being a child or other helpless person, be accompanied by a nurse, or person acting as a nurse, to care for such helpless person during treatment, the Secretary shall certify a statement of such need and shall authorize the payment of the necessary traveling and living expenses of such nurse or person acting as nurse, as provided in the act.

The following letter from Dr. McKinstry of the Indianapolis Pasteur Institute was read:

INDIANAPOLIS, IND., July 27, 1911.

Indiana State Board of Health, Indianapolis, Ind.:

GENTLEMEN—A law passed by the last General Assembly of Indiana provides that the State Board of Health establish a laboratory for giving Pasteur treatment to people infected with hydrophobia who are without means to pay for the same, or pay for their treatment in a private institution.

The Indianapolis Pasteur Institute is the only institution in the State giving such treatment. Naturally we would like a contract for doing the work for the Board of Health. The shipping of the material to the present laboratory of the Board of Health not only does not satisfy the law, but it is a question whether or not such treatment is safe. The degree of attention of such material is indefinite and the possibility of absolute destruction by heat or light is to be considered. Delay in beginning the treatment of cases is also a consideration. The Indianapolis Pasteur Institute can begin treatment on an hour's notice and at an expense equal to the expense of buying the material, providing a contract can be made for doing all the work. The only alternative within the law is for the State to establish a special laboratory for the production of the vaccine. The expense of such a laboratory could hardly be made to come within the appropriation.

The Indianapolis Pasteur Institute is grateful to the State Board of Health for past courtesies, and hereby offers to give the Pasteur treatment for the Board at \$50.00 per case.

Very truly yours,

HOMER R. MCKINSTRAY.

After consideration of Dr. McKinstry's letter as above set forth it was

Ordered: The letter of Dr. Homer R. McKinstry shall be laid upon the table for the present.

MANUAL OF INSTRUCTIONS FOR SCHOOL AUTHORITIES AND SCHOOL PHYSICIANS.

Issued jointly by the Indiana State Board of Education and the Indiana State Board of Health, as provided in Section 5 of the Medical School Inspection Law, approved March 6, 1911.

CHAS. A. GREATHOUSE,
Pres. State Board of Education.

J. N. HURTY,
Sec. State Board of Health.

[SEAL]

[SEAL]

INTRODUCTION.

The most valuable asset that any child can possess is good health. The health of the child very largely determines the success of the adult, and what we should be most concerned about in education is the laying up of vital assets for use in the active battle of life. One of the most commonplace of our proverbs tells us that: "Prevention is better than cure," yet it has heretofore been with the greatest difficulty that the public could be convinced that the prevention of defects in school children is better than their cure.

The State of Indiana has taken a forward step in providing by law for the erection of sanitary schoolhouses and for medical inspection of school children, and it will not be long until every school which makes any claim to progressiveness is provided with intelligent supervision of the health conditions of its pupils.

This manual is intended to cover in a brief way all the essentials necessary in the beginning of medical school inspection. No comprehensive plan can be outlined that will meet the needs of every school community. Medical inspection must be established in the different school communities of the State and worked out along lines that will meet the local conditions. So far as possible, it is the aim of this manual to have the fundamental prin-

ciples of school inspection carried out uniformly throughout the State. Hence the rules herein set forth have been made as simple and plain as possible. The institution of medical inspection by the Act of 1911 must be regarded not only as an attempt to safeguard the lives and health of the pupils in our public schools, but it is also a foreshadowing of better things to come. The Legislature has done its part and has prepared the way. It now rests with school and health officials to realize their responsibilities, to arouse public sentiment from its present state of apathy and by fulfilling the spirit as well as the letter of the law to develop the scheme of medical inspection into an efficient system of prevention.

Administrative expenditure of this kind is the soundest economy. No higher work can be conceived than that of conserving and safeguarding the health and lives of the children in the public schools of Indiana. As has been well said by David Starr Jordan:

"There is nothing in all the world so important as little children, nothing so interesting. If ever you wish to go in for philanthropy, if ever you wish to be of any real use in the world, do something for children. We can dress the sore, bandage the wounded, imprison the criminal, heal the sick and bury the dead, but there is always the chance that we can save the child. If the great army of philanthropists ever exterminate sin and pestilence, ever work out our race's salvation, it will be because a little child has led them."

THE SCHOOLS AND HEALTH.

That health is an asset is now realized by every one. It is a crime for anyone to suffer from a curable or preventable disease. Since the strength of a State depends upon the strength and character of its citizens, it becomes the duty of the State for its own protection to safeguard the health of its own people. It would seem that in no other place can this duty of the State be more fully met than in protecting and safeguarding the health of its future citizens in the public schools. It would seem also that a compulsory education law ought to be preceded by a law providing for the health and care of young people. Since such a law was not enacted before the compulsory education law, the Legislature of 1911 very wisely enacted the Sanitary Schoolhouse Law, which follows. This law marks an advanced step in the educational system of Indiana and will do much to conserve the health and normal physical development of the pupils in the public schools, as well as to increase the efficiency of school work.

THE SANITARY SCHOOLHOUSE LAW.

AN ACT entitled an act to protect the health and lives of school children, and increase their efficiency, by providing healthful schoolhouses, and requiring the teaching of hygiene.

(S. 28. Approved March 1, 1911.)

SCHOOLS—SANITARY BUILDINGS.

Section 1. Be it enacted by the General Assembly of the State of Indiana, That after the going into effect of this act, all schoolhouses which shall be constructed or remodeled, shall be constructed in accordance and conform to the following sanitary principles, to wit:

(a) *Sites.* All sites shall be dry, and such drainage as may be necessary to secure and maintain dry grounds and dry buildings, shall be selected and supplied. Said site and buildings shall not be nearer than 500 feet to steam railroads, livery stables, horse, mule or cattle barn used for breeding purposes, or any unhealthful conditions. Good dry walks shall lead from the street or road to every schoolhouse and to all outhouses, and suitable playgrounds shall be provided.

(b) *Buildings.* School buildings, if of brick, shall have a stone foundation, or the foundation may be of brick, or concrete: Provided, A layer of slate, stone or other impervious material be interposed above the ground line, or the foundation may be of vitrified brick and the layer of impervious material will not be required. Every two-story schoolhouse shall have a dry, well-lighted basement under the entire building, said basement to have a cement or concrete floor and ceiling to be not less than ten feet above the floor level. The ground floor of all schoolhouses shall be raised at least three feet above the ground level and have, when possible, dry, well-lighted basement under the entire building, and shall have a solid foundation of brick, tile, stone or concrete, and the area between the ground and the floor shall be thoroughly ventilated. Each pupil shall be provided with not less than 225 cubic feet of space, and the interior walls and ceiling shall be either painted or tinted some neutral color, as gray, slate, buff or green.

(c) *Lighting and Seating.* All schoolrooms where pupils are seated for study, shall be lighted from one side only and the glass area shall be not less than one-sixth of the floor area and the windows shall extend from not less than four feet from the floor to at least one foot from the ceiling, all windows to be provided with roller or adjustable shades of neutral color, as blue, gray, slate,

buff or green. Desks and desk seats shall preferably be adjustable, and at least twenty per cent. of all desks and desk seats in each room shall be adjustable, and shall be so placed that the light shall fall over the left shoulders of the pupils. For left-handed pupils desks and seats may be placed so as to permit the light to fall over the right shoulder.

(d) *Blackboards and Cloakrooms.* Blackboards shall be preferably of slate, but of whatever material, the color shall be a dead black. Cloakrooms, well lighted, warmed and ventilated, or sanitary lockers, shall be provided for each study schoolroom.

(e) *Water Supply and Drinking Arrangements.* All schoolhouses shall be supplied with pure drinking water and the water supply shall be from driven wells or other source approved by the health authorities. Only smooth, stout glass or enameled metal drinking cups shall be used; water buckets and tin drinking cups shall be unlawful and are forbidden; and whenever it is practicable, flowing sanitary drinking fountains which do not require drinking cups shall be provided. All schoolhouse wells and pumps shall be supplied with troughs or drains to take away waste water, and under no conditions shall pools or sodden places or small or large mudholes be allowed to exist near a well. When water is not supplied at pumps or from water faucets or sanitary drinking fountains, then covered tanks or coolers supplied with spring or self-closing faucets shall be provided.

(f) *Heating and Ventilation.* Ventilating heating stoves, furnaces, and heaters of all kinds, shall be capable of maintaining a temperature of 70 degrees Fahrenheit in zero weather and of maintaining a relative humidity of at least 40 per cent., and said heaters of all kinds shall take air from outside the building and after heating, introduce it into the schoolroom at a point not less than five nor more than seven feet from the floor, and at a minimum rate of thirty (30) cubic feet per minute for each pupil, provided, that when direct-indirect steam heating is adopted, this provision as to height of entrance of hot air shall not apply. Halls, office rooms, laboratories and manual training rooms may have direct steam radiators, but direct steam heating is forbidden for study schoolrooms, and direct-indirect steam heating is permitted. All schoolrooms shall be provided with ventilating ducts of ample size to withdraw the air at least four times every hour, and said ducts and their openings shall be on the same side of the room with the hot air ducts.

(g) *Water-closets and Outhouses.* Water-closets or dry closets when provided, shall be efficient and sanitary in every particular and furnished with stalls for each hopper or place; and when said water or dry closets are not provided, then sanitary outhouses, well separated for the sexes, shall be provided. Good dry walks shall lead to all outhouses and screens or shields be built in front of them. Outhouses for males shall have urinals arranged with stalls and with conduits of galvanized iron, vitrified drain pipe, or other impervious material, draining into a sewer, vault or other suitable place, approved by the health authorities. Any school trustee or trustees who shall build or construct any schoolhouse or cause to be built or constructed any schoolhouse which does not include each and every sanitary provision commanded in this act, shall, upon conviction, be fined in any sum not less than one hundred nor more than five hundred dollars; and any money claim for the material entering into, or any money claim for the construction of any schoolhouse which does not in every way and all respects comply with the requirements of this act shall be null and void.

TEMPERATURE—UNCLEANLINESS—TEACHERS—PENALTIES.

Sec. 2. Whenever, from any cause, the temperature of a school-room falls to 60 degrees Fahrenheit or below, without the immediate prospect of the proper temperature, namely, not less than 70 degrees Fahrenheit, being attained, the teacher shall dismiss the school until the fault is corrected; and it shall also be the duty of all teachers to immediately send home any pupil who is perceptibly ill in any way, or who is unclean and emits offensive bodily odors or who is infested with lice or other vermin; and the truant officer shall arrest and prosecute parent or guardians who do not rid their children or vermin and bodily uncleanliness, when notified to do so. Refusal of parents or guardians to free their children or wards of vermin or to bathe and cleanse them, making them fit to go to school, shall be punished by a fine of not less than five dollars and imprisonment for ten days, or both. And if the refusal or neglect of parents or guardians to bathe and cleanse their children or wards makes it necessary, then the truant officer, upon order of the school authorities, shall have it done, the cost to be paid by the school authorities from the school funds. Whenever diphtheria, scarlet fever or other contagious and infectious diseases break out in any school it shall be the duty of the township trustee, school board, school trustee or the school authority or authorities having control,

to have medical inspection made of the pupils, and all found in any degree ill shall be sent home and there retained until the local health officer gives a certificate of health, then such child may be again admitted to school. It shall be unlawful for school authorities to employ teachers or janitors who are not able-bodied or who are addicted to drugs or intemperate, or who have tuberculosis or syphilis. All schoolhouses shall be specially cleaned and disinfected each year before they are used for school purposes. The cleaning shall consist in first sweeping, then scrubbing the floors, washing the windows and all woodwork, including the wooden parts of seats and desks, and the disinfecting shall be done in accordance with the rules of the State Board of Health. Township trustees, school boards and boards of school commissioners who neglect or refuse to obey the provisions of this section shall be fined in any sum of not less than ten nor more than one hundred dollars, and each said refusal or neglect shall constitute a separate offense.

HYGIENE AND SANITARY SCIENCE—PRINTED DATA.

Sec. 3. There shall be taught in each year in the fifth grade of every public school in Indiana, the primary principles of hygiene and sanitary science, and especially shall instruction be imparted concerning the principal modes by which each of the dangerous, communicable diseases are spread, and the best sanitary methods for the restriction and prevention of each such disease. Hygiene may also be taught in other grades at the will of school authorities. The State Health Commissioner and the State Superintendent of Public Instruction shall jointly write, compile or originate printed data in leaflet form, setting forth as plainly as possible, the primary principles of hygiene and sanitary science, and information concerning the prevention of diseases, and supply the same to all county superintendents, and said superintendents shall supply all the schools in their respective counties and see to it that teachers do not fail to comply with this section: Provided, That for all cities and towns having school superintendents, the said leaflets and pamphlets shall be sent direct to such superintendents, who shall see to it that teachers comply with this section. The State Printing Board shall publish from its funds all health leaflets or pamphlets as are herein provided for, and shall also pay the cost of distribution of the same to the county, city or town superintendents, from the State printing funds.

SCHOOL OFFICERS—POWERS.

Sec. 4. For the purpose of enforcing this act and making it practical, township trustees, boards of school trustees and boards of school commissioners shall have the power, and it is herewith made lawful for said trustees and said boards to make a levy not to exceed five cents (5 cents) on each one hundred dollars (\$100.00), the sum thus raised to be added to the special school fund, but to be used only for building and furnishing of schoolhouses. This levy shall not be made unless plainly necessary.

PENALTY AS TO OFFICERS.

Sec. 5. Any township trustee or the members of any board of school trustees or any teacher or any person who violates any provision of this act, except as herewith or otherwise provided, shall upon conviction, be fined not less than \$50.00.

REPEAL.

Sec. 6. All laws in conflict with this act are repealed.

INDIANA STATE BOARD OF HEALTH RULES GOVERNING QUARANTINE AND EXCLUSION FROM SCHOOL.

Rule 1. The infectious and contagious diseases which shall be immediately reported to the health officer having jurisdiction and which shall be quarantined are hereby declared to be: Yellow fever, smallpox, cholera, diphtheria, membranous croup, scarlatina (scarlet fever), measles, typhus fever, bubonic plague, leprosy, cerebrospinal meningitis, poliomyelitis, pulmonary consumption, typhoid fever, chickenpox and whooping cough. Provided, Pulmonary consumption and typhoid fever shall not be quarantined, but are to be reported for record only. And chickenpox, whooping-cough and measles shall be carded to warn the public, absolute quarantine not being required. When quarantine has been established as provided by law the quarantine card or flag shall remain in place until after the patient has been removed from such house or has recovered and is no longer capable of communicating the disease, and the house and contents thereof have been properly disinfected by order of the health officer having jurisdiction.

Rule 2. Every physician attending a person affected with any quarantinable disease shall use every precaution to prevent communicating the disease to others. To this end the Board recom-

mends that a cap and gown, linen duster, rubber coat or other sufficient cover for the clothing be worn. Before leaving the premises the hands and face should be cleansed with soap and water and a disinfecting solution. The coat, cap, antiseptic soap and bottle of disinfectant should be carried in a special receptacle which should contain a piece of cotton constantly wet with formaldehyde. Health officers and attending physicians should give full and explicit instructions to parents, nurses and attendants concerning every precaution to be taken against the spread of infectious disease.

Rule 3. Any house or building and its contents in which a case of quarantinable disease, and including tuberculosis and typhoid fever, has occurred shall be disinfected under the supervision of the health officer having jurisdiction, or his deputy, in accordance with the rules of the State Board of Health.

Rule 4. The minimum period of isolation, quarantine and exclusion from school in contagious diseases shall be as follows:

Smallpox. For the patient, quarantine for not less than twenty-one (21) days after the beginning of the disease, and until all crusts and scales have fallen off or been removed, and the disinfection of patient, clothing and premises. For exposed persons, quarantine for fourteen (14) days from date of last exposure unless successfully vaccinated or protected by a previous attack of the disease, and person and clothing have been disinfected: Provided, That persons who have not been previously vaccinated and who shall submit to vaccination may be released from quarantine after disinfection of person and clothing when it has been shown that such vaccination is successful. Exclusion from school for seven (7) days following the removal of quarantine.

Scarlet Fever. For the patient and children in the family with the patient, quarantine for not less than twenty-one (21) days after the beginning of the disease. Exclusion of the patient and children associated with the patient, from school for ten days after removal of quarantine. Other children of the family may, at the discretion of the health officer having jurisdiction, be disinfected and removed to another house and shall there be isolated and excluded from school for a period of ten days and then released, provided they remain free from the disease. For adults living in the family with or exposed to the patient: While the house remains quarantined, unless said adults submit to thorough disinfection of the body and clothing and do not come in contact with the patient.

Diphtheria. For the patient, quarantine until the secretions from the nose and throat are free from diphtheria infection as shown by bacteriological examination of such secretions. For children associated with or in the family with the patient, quarantine until death or recovery of the patient and disinfection of person, clothing and premises: Provided, That other children of the family who shall receive an immunizing dose of

antitoxin of not less than 1,000 units, may be released from quarantine at the discretion of the health officer having jurisdiction, after disinfection of person and clothing. The patient shall be excluded from school until a medical certificate that the nose and throat are free from infection, based upon bacteriological examination, is furnished. Children associated with or in the family with the patient shall be excluded from school for seven (7) days after release from quarantine unless a medical certificate of having received an immunizing dose of not less than 1,000 units of antitoxin is furnished. Adult members of the family may be released from quarantine on the condition that they be disinfected in person and apparel and remain away during the quarantine period.

Epidemic Cerebro-Spinal Meningitis. For the patient, isolation from the rest of the family and quarantine for not less than fourteen (14) days after the first appearance of the disease until death or recovery of the patient and disinfection of the premises. Persons living in a house where the disease is present shall not mingle with the general public until the disease has terminated and the premises have been thoroughly disinfected. And children from said house shall be excluded from school during the quarantine period.

Measles. For the patient, isolation and quarantine for not less than fourteen (14) days and until peeling or desquamation has ceased. Patient shall not be permitted to attend school for five (5) days after quarantine has been removed. For other members of the family, quarantine is not required, but children in the household must not attend school or other public gatherings or mingle with other children unless satisfactory proof shall be furnished to the health officer having jurisdiction of their having had the disease, in which event the said health officer may, at his discretion, permit the said children to attend school and other public gatherings.

Whooping-Cough. For the patient, isolation and quarantine for not less than five (5) weeks from the beginning of the disease and until the "whoop" has entirely ceased. For other members of the family quarantine not required, but children of the same household must not attend school or other public gatherings or mingle with other children, unless satisfactory proof shall be furnished of having had the disease, in which event the health officer having jurisdiction, at his discretion, may permit attendance at school.

Chickenpox. For the patient, quarantine for not less than fourteen (14) days from the beginning of the disease and until all scales and crusts have disappeared. Children living in houses where the disease exists are to be excluded from school two (2) weeks unless satisfactory proof of having had the disease is furnished.

Epidemic Poliomyelitis. For the patient, isolation and quarantine for not less than twenty-eight (28) days from the beginning of the disease. For other members of the family, at the discretion of the health officer having jurisdiction: Provided, That the wage earners may be allowed to attend to their work by observing the precautions recommended by the health officer. Other children in the family shall not be permitted to attend school or public gatherings or to mingle with other children for a period of fourteen (14) days after the beginning of quarantine.

Rule 5. When it is known that a person has attended school while suffering from any of the following named diseases: Measles, scarlet fever (scarlatina), diphtheria (membranous croup), small pox, epidemic cerebro-spinal meningitis, epidemic polomyelitis cholera, or bubonic plague, the local health officer shall cause the schoolroom occupied by such person to be thoroughly disinfected according to the rules of the State Board of Health, before being used again for school purposes.

Rule 6. When a case of contagious disease is reported it shall be the duty of the health officer having jurisdiction to ascertain the schools attended by any children from the infected premises and to serve notice upon those in charge of such schools, requiring that all persons from such infected premises be excluded from the school until a medical certificate or a written permit from the health officer is presented.

Rule 7. When a person affected with any of the quarantinable diseases has recovered and is no longer able to communicate the disease to others, or has died, the attending physician shall notify the health officer, and as soon thereafter as the health officer deems it advisable the house in which such person has been ill and the contents thereof shall be thoroughly disinfected by the health officer or his deputy.

Rule 8. The sale or use of milk or dairy or food products from the premises where one of the quarantinable diseases exists or where typhoid fever is present is strictly forbidden unless the milk, dairy or food products are handled, cans and pails washed and stock cared for by persons entirely segregated from the affected person and family, and then only upon permission of the local health officer.

Rule 9. No milk bottles shall be taken from premises on which a quarantinable disease exists until after the quarantine has been raised and said bottles have been thoroughly cleansed and disinfected by the proper health officer. Milk tickets and bread tickets shall not be taken from such premises, but shall be destroyed. No mail matter shall be taken away from such premises while the premises are under quarantine. Cats and dogs and other domestic animals belonging to premises under quarantine shall be kept out of the house and from contact with the patient. Should these precautions not be observed strictly, it shall be the duty of the health officer to cause such domestic animals to be destroyed.

Rule 10. The body of a person who has died of any of the quarantinable diseases mentioned in Rule 1 shall not remain unburied for a longer period of time than twenty-four (24) hours after death, unless embalmed and thoroughly prepared by a licensed embalmer. The undertaker or persons acting as such shall be responsible for any violations of the provisions of this rule.

Rule 11. All services held in connection with the funeral of a body of a person who has died of any of the diseases mentioned in Rule 1 shall be private. The attendance thereat shall include only the immediate adult relatives of the deceased, the necessary number of adult pallbearers, the minister and undertaker. Such services shall be held only in the home and any advertisement of such funeral shall state the cause of death.

DIRECTIONS FOR SCHOOLHOUSE DISINFECTION.

The Sanitary Schoolhouse Law of 1911, under Section 2, provides that "All schoolhouses shall be especially cleaned and disinfected each year before they are opened for school purposes. The cleaning shall consist in first sweeping, then scrubbing the floors, washing the windows and all woodwork, including the wooden parts of seats and desks, and the disinfecting shall be done in accordance with the rules of the State Board of Health." The rules of the State Board of Health provide that disinfection of schoolhouses shall be done as follows:

1. Carefully close all windows and doors, except one door for exit. Paste paper over stovepipe holes, and apply wetted paper or, better, paste paper strips over all windows, transom or door cracks. In a word, seal the room tightly with paper strips from the inside.

2. Open closet doors, drawers, trunks, boxes, etc. Suspend clothing upon lines stretched across the room, or spread out on chairs or clothes horse. All books must be opened and the leaves spread. In short, the room and its contents must be so disposed as to secure free access of gas to all parts and all objects.

3. Make the air in the room damp; this is absolutely necessary for disinfecting by formaldehyde. Dampness may be produced (a) by boiling water on a gas, gasoline or oil stove; (b) by pouring boiling hot water from a teakettle into a tub; (c) by pouring hot water onto bricks or stone, or by dropping hot bricks or stones into vessels containing water. Under no circumstances is efficient disinfection possible without in some way making the air of the room quite damp.

4. Measure the room and multiply the length, breadth and height together. This will give the contents in cubic feet. Divide by 1,000, and this gives the number of thousand cubic feet in the room. This is called the unit space.

5. Measure the room, and for each 1,000 cubic feet (unit space) use two pints of formaldehyde and three and one-half ounces of commercial permanganate of potassium. Procedure: Place a large washbowl, crock, tin dishpan or galvanized iron pan or tub in the center of the room. Put in the required amount of permanganate of potassium and lastly, pour in the required amount of formaldehyde. Permanganate must be put in first. Retire immediately after pouring in the formaldehyde, for the formaldehyde gas is promptly released and is injurious if breathed in any quantity. Keep the room closed for at least three hours, then open, air thoroughly, and clean in the usual way.

Solidified formaldehyde may be used for gaseous room disinfection, using not less than one ounce of solidified formaldehyde for each 1,000 cubic feet, not neglecting moisture.

HEALTH SUPERVISION IN PUBLIC SCHOOLS.

The necessity for careful supervision of the health and development of school children is no longer open to argument. The people themselves are demanding such supervision as the most vital function of the public school system, so that no school can any longer claim a place in modern educational progress which ignores or neglects the health conditions of its pupils. In the light of present knowledge concerning the health of school children, it may be said that a community which neglects a systematic health care of its school pupils is guilty of criminal negligence. If all parents were sufficiently wise in health matters it would probably be unnecessary for schools to make any special study of the physical condition of the children entrusted to their care. But it is a fact, and not a theory, that not all nor even most parents are wise in matters pertaining to the health condition of their children. It becomes, therefore, the plain duty of the school department to furnish not only a healthy school environment, but also a careful guardianship of the personal health of its pupils.

Medical supervision includes far more than inspection. It means a health study in a broad sense of the pupils in the schools, with an attempt to adjust them to their physical environment. It means a study of the condition of sight, hearing, an examination

for evidence of nasal obstruction, diseased tonsils, seriously defective teeth, disorders of nutrition and development, unbalanced nervous organism, for signs of early heart or lung disease, for enlarged glands, skin diseases, and symptoms of children's common contagious diseases. It means the careful physical study of school children, for it has been shown clearly that there is an intimate relation between the child's physical condition and his mental progress and future success.

Facts obtained from actual observation in many different schools of Indiana show that of all the pupils in the public schools below and including the eighth grade, 60 per cent. suffer from some physical defect that to a greater or less degree impairs their mental efficiency; that fully 25 per cent. of all grade pupils have diseased tonsils; that 18 to 20 per cent. have defective vision; that 15 per cent. have adenoids; that 8 to 10 per cent. have defective hearing, and that fully 35 per cent. have defective teeth to such an extent as to impair nutrition, thus seriously decreasing their mental efficiency. In the face of these facts no argument is needed in favor of medical school inspection.

All who are interested in health inspection realize that it will cost. All good and desirable things do cost. We have long since recognized the need of properly inspecting our domestic animals and we gladly pay the cost for this work. The children of a State are truly its most valuable asset. We, therefore, should not only be willing but anxious to pay whatever is necessary for their care. Medical inspection of school children looks to the future as well as to the present. By relieving and removing present defects it prepares for a stronger and sturdier body of citizens in the near future. In order to bring about such a result the citizens of the present should willingly make the needed investment.

MEDICAL SCHOOL INSPECTION LAW.

An ACT entitled an act to protect and conserve the health and lives of school children and promote their efficiency by providing for their medical inspection and subsequent necessary treatment.

(H. 27. Approved March 6, 1911.)

SCHOOLS—MEDICAL INSPECTION OF CHILDREN.

Section 1. Be it enacted by the General Assembly of the State of Indiana, That all school trustees and township trustees are herewith permitted and recommended to institute medical inspection of school children at any time; the said trustees may require teach-

ers to annually test the sight and hearing of all school children under their charge, the said tests and uses thereof to be made according to the rules hereinafter authorized.

MEDICAL INSPECTION DEFINED.

Sec. 2. The term, medical inspection, as used in this act, shall be held to mean the testing of the sight and hearing of school children and the inspection of said children by school physicians for disease, disabilities, decayed teeth or other defects, which may reduce efficiency or tend to prevent their receiving the full benefits of school work.

SCHOOL PHYSICIAN—APPOINTMENT—COMPENSATION.

Sec. 3. Beginning with the school year 1911, school trustees and township trustees may appoint at least one school physician for each school corporation: Provided, Where practicable, two or more school corporations may unite and employ one such physician, whose duties shall be such as are described in this act and the authorized rules, but no physician shall have more than 2,000 school children under his charge. Said school physicians shall be graduates of a medical college, recognized by the State Board of registration and examination, shall hold a license to practice medicine in Indiana, and shall be informed and skilled in medical inspection of children, informed in the health laws and the health rules of the State board of health, shall be temperate, able-bodied, cleanly in person, not addicted to drugs, and of good moral character, and no others shall be appointed. School physicians may be discharged by the appointing power at any time. School physicians shall serve one year and until their successors are appointed, and shall receive such compensation as the appointing trustee or trustees may determine.

PHYSICIAN'S DUTIES.

Sec. 4. School physicians shall make prompt examination and diagnosis of all children referred to them and such further examination of teachers, janitors and school buildings as in their opinion the protection of the health of the pupils and teachers may require. Whenever a school child is found to be ill or suffering from any physical defect, the school physician shall promptly send it home, with a note to parents or guardians, briefly setting forth the discovered facts, and advising that the family physician be consulted.

If the parents or guardians are so poor as to be unable to give the relief that is necessary, then school trustees and township trustees, as the case may be, shall provide the necessary relief: Provided, That in cities where public dispensaries exist the relief shall be given by said dispensaries. School physicians shall keep accurate card-index records of all examinations, and said records, that they may be uniform throughout the State, shall be according to the form prescribed by the rules authorized in this act, and the method and manner of reports to be made shall be according to said rules: Provided, however, That if the parents or guardian of any school child shall at the beginning of the school year furnish the written certificate of any reputable physician that the child has been examined and parents notified of the results of such examination in such cases the services of the medical inspector herein provided shall be dispensed with, and such certificate shall be furnished by such parent or guardian from time to time, as required by the trustee or board of trustees having charge of such schools.

RULES FOR ENFORCEMENT.

Sec. 5. The State Board of Education and the State Board of Health shall jointly pass rules for the detail enforcement of the purposes of this act, which rules shall bear the printed seals of said boards; the said rules to be printed and promulgated by the State Printing Board; promulgation to consist in supplying a reasonable number of copies to each county superintendent, from whom all who are interested may procure a copy.

PENALTY.

Sec. 6. All violations of this act, except as otherwise provided, shall be punished by a fine of not less than ten or more than fifty dollars.

RULES FOR MEDICAL SCHOOL INSPECTION.

THE SCHOOL PHYSICIAN.

Rule 1. It shall be the duty of the school physician to examine all school children as soon as practicable after their first admission to school. This examination shall take note of said children as to cleanliness, obvious physical defects, as physical deformities, condition of nose and throat, and teeth, ear discharges, squints, general fitness for school life and previous medical history. Measurement of height and weight shall be recorded. This first examination shall be conducted in the presence of the parents or family physi-

cian, if so desired. (Provided, that any child presenting a certificate of examination as provided in the medical inspection law, shall be exempt from the school physician's examination.) A permanent record of all such examinations shall be kept on blanks, according to form prescribed by the State Board of Education and State Board of Health. Such records to be subject to inspection by the public only on an order from the school physician.

Rule 2. It shall be the duty of the school physician to make an examination of all children referred to him by teachers. Such examination to consist of whatever may be necessary to determine whether or not the child should be excluded from school. Such examination shall be made in the presence of the parents if so desired. In all matters pertaining to exclusion from school the decision of the school physician shall be final. A record shall be kept of all such examinations on forms shown in this manual, to be provided by the school authorities, a copy of which shall be furnished the parents or guardian of said children.

Rule 3. It shall be the duty of the school physician to make a general examination of all the children in the public schools at least once a year for any defect or disability tending to interfere with their school work, and a special examination of children (a) who show signs of being in ill health or of suffering from infectious or contagious diseases (b) who are returning to school after absence on account of illness or from unknown cause.

Rule 4. It shall be the duty of the school physician to make such examinations of teachers, janitors and school buildings as in his opinion the protection of the health of the pupils may require.

RULES FOR TEACHERS.

The teachers in all the public and parochial schools of the State of Indiana shall test the sight and hearing of all school children under their charge, once in each school year, and at such other times as may be necessary. The sight test shall be made by the use of the Snellen's Test Type Chart and the hearing test shall be by the watch test or the whisper test, preferably the whisper test. An individual record shall be kept of said test and whenever a defect of vision or hearing is noted the case *shall be referred to the school physician*. Teachers and school officials shall rigorously exclude from school all children specified in any notice of exclusion issued either by the school physician or by the local health officer until such children shall present a certificate of admission from the school physician or the health officer.

RULES FOR TESTING EYESIGHT.

Rule 1. The annual test for eyesight and hearing shall be made as early in the school year as possible, preferably in September. Individual pupils may be tested at any time that a test is considered necessary.

Rule 2. All tests shall be made as nearly as possible under the same conditions and shall be supervised by the principal or superintendent, in order to see that the conditions of the test are uniform as far as possible for the different classes.

Rule 3. Do not expose the test type chart except when in use, as familiarity with the chart leads children to learn the letters "by heart." Children should be examined singly.

Rule 4. Test each eye separately. Have the pupil begin at the top of the test card and read down as far as he can, first with one eye and then with the other. Hold a card over one eye while the other is being examined, but do not press on the covered eye, as pressure may produce an incorrect examination.

Rule 5. Place the test chart on the wall in a good light at about the level of the pupil's head and at a measured distance of 20 feet from the pupil. The chart should have a good side illumination and not hang in range of a window, which will dazzle the eyes.

Rule 6. Children wearing glasses shall be tested with the glasses properly adjusted, and if sight is found normal with the glasses it shall be recorded as normal.

Rule 7. Record as defective only those whose vision is 10-20 or less in either eye.

Rule 8. Where the child cannot name the individual letters, although able to read, the chart figures may be used. If the child does not know figures or letters, use the chart of inverted E's, asking the child to tell by the movement of the hand the side on which there is an opening on the E's, i. e., up, down, right or left.

Rule 9. The lines on the chart are numbered to indicate the distance the respective letters should be read by the normal eye. The record is made by a fraction, of which the numerator represents the distance of the chart from the child and the denominator the lowest line he can correctly read. Thus, if at 20 feet the pupil reads the line marked 20 feet, the vision is 20/20 or normal. If he only reads correctly the line above marked 30 feet, his vision is 20/30 or 2/3 normal. If at a distance of 20 feet the pupil can only read correctly the line marked 40 feet, the vision is 20/40 or 10/20, which must be recorded as defective.

If a pupil cannot read the largest letters he must go slowly toward the chart until he can. The distance he is from the chart when he can read the largest letters will be the numerator and 200 the denominator.

Rule 10. Report to the State Board of Health the total number of children examined and the number found defective in eyesight and hearing by test.

METHOD OF TESTING HEARING.

The person conducting the test should be possessed of normal hearing. The examination should be conducted in a room not less than 25 feet long and situated in as quiet a place as possible. The floor should be marked with parallel lines, one foot apart and numbered. The child should sit in a revolving chair in the first space. Examination should be made with the whisper or spoken voice. The child should repeat what he hears and the distance at which words can be heard distinctly should be noted. The two ears should be tested separately. The test words may consist of numbers from one to one hundred and short sentence. It is best that but one pupil at a time be allowed in the room, to avoid imitation. The standard to be adopted is as follows: In a still room the standard whisper can be heard easily at 25 feet. The whisper of a low voice can be heard from 35 to 45 feet and of a loud voice 50 to 60 feet.

In the watch test the ticking of a watch is used instead of the voice. The watch test, however, cannot be depended upon for the reason that children when asked if they hear the ticking of a watch will answer, "Yes," when in fact they do not hear the watch. For this reason the whisper test should be used.

BLANK FORMS.

The following blank forms are recommended for use in connection with the institution of school inspection, in order that the system of supervision and records may be uniform wherever medical inspection is established throughout the State. Additional blanks and forms may be added by school officials to meet local conditions, or as the scope of medical supervision may be enlarged. The forms herein given will be found essential and are to be adopted as the basis of record wherever medical inspection is instituted.

SCHOLARSHIP AND PHYSICAL RECORD.

No. 1.

DEPARTMENT OF SCHOOL HYGIENE.

Physical Record.

CITY SCHOOLS.....

HEALTH RECORD OF		SEX: M.-F. BORN:																			
Address		History of Rheumatism					Measles					Scarlatina									
Diphtheria		Pertussis					Pneumonia					Mumps					Grippe				
SCHOOL YEAR		1		2		3		4		5		6		7		8		9			
EXAMINATION AND RESULTS		E	R	E	R	E	R	E	R	E	R	E	R	E	R	E	R	E	R		
DATES																					
General Appearance																					
Nutrition																					
Flat Foot																					
Eyes																					
Ears																					
Nose																					
Throat																					
Teeth																					
Skin																					
Heart																					
Lungs																					
Neck Glands																					
Vaccination																					
Height																					
Weight																					

REMARKS

t = Normal.
 - = Not normal.
 E = Examination.
 C = Corrected.
 N = Not corrected.
 R = Result.
 P. C. = Partially corrected.

For details see other side.

The above form is for a complete physical and scholarship record of the pupil while enrolled in the schools. This requires a card 6 x 16 inches, perforated to fold lengthwise, the inside blank space of the folded card to be used for writing the details of physical examinations, with the record of treatment and results.

Both forms shown above are to be printed on one card.

No. 3.

NOTE TO SCHOOL INSPECTOR.

Name

Residence

School

Please examine this pupil for

.....Teacher.

When out of blanks notify

No. 4.

SCHOOL HEALTH DEPARTMENT.19...

TO THE PARENT OR GUARDIAN OF

.....

It is my duty to report to you the result of an examination of the above named.

.....

.....

.....

You are advised to take to a physician for further advice and treatment. Be sure and

TAKE THIS PAPER TO THE DOCTOR.

.....

Medical Inspector of Schools.

35 100

No. 5.

.....SCHOOL.....19...

TO THE PARENT OR GUARDIAN.

.....was sent home from school because
the child's body was not clean,
the head was not clean,
the clothes were not clean.

The child must not be sent back to school until clean.

.....Principal.

No. 6.

DEPARTMENT OF SCHOOL INSPECTION.

.....PUBLIC SCHOOLS.....19...

Principal:

Admit

.....

.....

Medical Inspector.

SCHOOL HEALTH DEPARTMENT.19...

TO THE PARENT OR GUARDIAN

of

It is my duty to report to you that

.....

*has been examined by the school inspector—or dentist—and that.....
teeth need cleaning—treatment—filling.*

PLEASE SECURE COMPETENT DENTAL ADVICE AT ONCE.

.....Teacher.

SCHOOL HEALTH DEPARTMENT.19...

NOTICE TO PARENT OR GUARDIAN.

You are hereby notified that

.....

has been examined by the school inspector and found to have symptoms of

.....

PLEASE SECURE COMPETENT MEDICAL ADVICE AT ONCE.

.....Teacher.

SCHOOL HEALTH DEPARTMENT.19...

NOTICE TO PARENT OR GUARDIAN.

You are hereby notified that the school examination of

.....

*shows some trouble with the ^{ears} which needs competent medical advice.
eyes*

PLEASE ATTEND TO THIS AT ONCE.

.....Teacher.

**BLANK FORM FOR REPORT TO STATE BOARD OF HEALTH OF
RESULT OF EYESIGHT AND HEARING TEST.**

SCHOOL HEALTH DEPARTMENT. 19....

EYESIGHT.			HEARING.		
Grade.	Number Examined.	Number Defective.	Grade.	Number Examined.	Number Defective.
1			1		
2			2		
3			3		
4			4		
5			5		
6			6		
7			7		
8			8		

.....
Superintendent.

TEACHING OF HYGIENE.

As provided in Section 3 of the Sanitary Schoolhouse Law, the State Health Commissioner and State Superintendent of Public Instruction have prepared a series of pamphlets upon hygiene and sanitary science, which are to be used in connection with the works on physiology and hygiene adopted by the State Board of Education. These supplemental pamphlets will be sent out from time to time to county and city superintendents, to be distributed to teachers as provided in the Sanitary Schoolhouse Law.

SOME COMMENTS ON THE INDIANA SANITARY SCHOOLHOUSE LAW.

The purpose of the Indiana Sanitary Schoolhouse Law, as stated in the preamble to the law, is "to protect the health and lives of school children and increase their efficiency." While the law is specific in every particular, it is manifestly impossible to enact a law that will cover every detail and provide for the many and varied local conditions that may arise. It is the purpose of this article to go into details in a brief way and, if possible, make plainer the purposes and provisions of the law.

(a) *Site.* The selection of the site for a school building has an important bearing upon its hygienic condition. The land on which a schoolhouse is built should always be high and dry, with every

precaution taken against dampness in the basement or about the building. There are many diseases not directly due to dampness, but which are fostered by its presence, particularly diphtheria, typhoid fever, rheumatism and consumption. A schoolhouse should never be located upon "made ground," that is, upon ground that has been filled in with ashes, rubbish, or animal or vegetable refuse. The air and moisture arising from such land will contain foul gases which are bound to make their way into the basement and building. The best soil for a schoolhouse site is gravel. Next in order of preference is a sandy soil and then sandy clay. Unmixed clay soil retains moisture very readily and basements dug in such soil are very likely to be damp. A schoolhouse should be far from confusing noises, such as those made by trains and factories. There are numerous instances of school buildings in Indiana located so near railroads that it is necessary to postpone school work whenever a train passes. The reason for a provision in the law which prohibits a school building being located nearer than 500 feet to any noise-making industry or any unhealthful condition is plainly obvious. The school building, as a general rule, should not cover more than one-half the school lot. A good rule to follow is that no adjoining structure should be nearer than twice the height of the school building. The necessity for ample playgrounds is now generally recognized. In laying out a school yard at least 30 square feet should be allowed for each pupil. Rural school yards should be one acre or more in extent. Very frequently the choice of a school site is influenced by mercenary considerations, so that a school is located in a particular spot because the land is cheap. The importance of hygienic considerations should rise above all other factors and it should be borne in mind always that no land is too good for school purposes.

(b) *Building.* The Sanitary Schoolhouse Law deals with the school building only from a hygienic standpoint. The construction of a school building should receive as much attention from the sanitary authorities as from the architect, and only when the two work together may we hope to see ideal school buildings. While the demands of different communities will require much variation in plans, yet there are many general principles that apply in all cases. The first consideration is a "dry, well-lighted basement"; not a dark, foul storage room for the accumulation of old rubbish, but a clean, well-ventilated and well-lighted room that can be used in stormy weather with safety as a playground for children. Such a

basement besides, can be used as a laboratory, for manual training work, for gymnastics and in various other ways as the needs of the school may require. In order that plenty of light may be admitted, the top of the foundation must be at least three feet above the ground, and four feet is even better. School buildings should not be above two stories in height, for the reason that stair climbing is not advisable and may be injurious to growing girls, and because of the greater danger in case of fire. School entrances should be large, sufficient in number, and in all cases the doors should open outward and be fitted with automatic opening devices. Under no consideration should any outside door to a school building be fastened when school is in session, because of the danger of a crush in case of fire. Stairways should be not less than 5 feet in width with steps of uniform shape, and equal width, the steps to be not more than 8 inches high. No flight of stairs should have more than 15 steps between landings.

(c) *Lighting and Seating.* No obstruction to the entrance of light should exist outside the school building. The best light will be had where the longer axis of the building runs east and west and the windows are on the north and south sides only. For the best and most equal distribution of light the school rooms should be long and narrow with windows on but one side. The light from the left of the pupil is best because it falls on the desk without shadows. Most pupils are right-handed and are consequently annoyed by light from the right causing shadows upon their work. Crossed light from both right and left is injurious. Light from the front dazzles the eyes. If the light comes from the rear, the pupil's head causes shadows and the teacher faces the dazzling light. Windows should extend to within one foot of the ceiling for the reason that light from the upper part of a window is thrown farther in a room thus insuring more even distribution. Windows should extend not nearer than four feet from the floor to prevent the light from the lower part of the window shining upwards into the eyes of the pupil.

The Desks and Desk Seats.—The average child is employed at school work about one-third of the entire working period from six to fifteen years of age. This is essentially the formative period in the child's life, during which the bones are undergoing a transformation from cartilage to fully matured bone. The proper seating of the child in school during this most important period becomes an urgent problem. The old-fashioned school furniture, in which the

child is compelled to fit the seat and desk, thus involuntarily assuming an injurious position has been responsible for more near-sightedness, curvatures of the spine, difficulties of respiration and distortions of the body than any other one cause. The more common defects of school seats and desks are as follows:

1. The desk too high for the child's sitting height, causing an elevation of one shoulder in attempting to write, with a corresponding lowering of the other shoulder, thus producing a tilt of the spinal column.
2. The desk too low, causing the child to stoop forward. This produces round shoulders from continued stooping and interferes with circulation and respiration.
3. Desk too far away from the seat, causing a stoop of the body with injury to the eyes and compression of the chest and abdomen.
4. Seats too high so that the feet are not supported.
5. Improper support for the back, causing fatigue and curvature of the spine.
6. Seat not suitably hollowed, causing pain and restlessness.
7. A well-proportioned desk and seat, but not adapted to the size of the child using it.

The remedy for these defects is the adjustable school desk and seat, properly modeled and properly adjusted to the pupil. Every pupil should have a desk and seat adjusted to him carefully with the adjustment changed once or even twice a year as required to allow for growth. Teachers may object to adjustable furniture because of the trouble necessary in proper adjustment, and because of the unsightliness of different heights of seats and desks in the same schoolroom. These are trivial objections, and are far outweighed by the greater advantages of the child's proper growth. Two terms have come into use with adjustable school furniture, the "distance" and the "difference." In adjusting seats and desks, the "difference" only is of importance. By this term is meant the vertical distance measured from the rear edge of the pupil's desk to the plane of the seat. The proper length of this distance should be equal to the space between the pupil's elbow and the seat bones, taken in an erect sitting posture. The height of the seat from the floor should correspond to the length of the pupil's legs from the sole of the foot to the knee. Especial care should be given to crippled children who are obliged to attend school. Those suffering with hip or knee diseases where the joints are immovable should be

given a seat with a desk placed 8 or 10 inches further away than ordinary, to allow a greater range of motion. If one of the lower limbs be shortened, a small footrest should be supplied for the shortened member. Cases of curvature of the spine, which are found often, can be made more comfortable by the use of a pad upon which to rest the back. All children who are afflicted in any way should be allowed more than ordinary privileges in moving about the room.

(d) *Cloak Room.* Wardrobes and cloak rooms should not be a part of the schoolroom. Outer garments of children frequently carry disease germs, and damp outer garments should never be allowed to remain in the same room with school children. A model cloak room should be separated from the schoolroom, should be connected with the corridor and should have windows so arranged as to allow a considerable supply of fresh air to circulate about the clothes. It should contain individual compartments or lockers for each pupil's garments. In some schools there are drying closets attached to the cloak rooms, for use on damp and rainy days for drying wet shoes and outer wraps of the pupils. This is a most excellent arrangement and should be installed wherever possible. It would be of great service, especially in times of epidemics to have a small air-tight closet where garments, books and other articles brought from home to school could be thoroughly disinfected.

(e) *Water Supply and Drinking Arrangements.* The necessity for a good, wholesome supply of drinking water in connection with all schools is obvious. This supply when not obtained from the regular city water supply should be from deep driven wells. In this connection it may be well to know that a driven well is not safe unless made safe and kept so. Numerous instances have been noted where the well, although a deep driven well, had a gallery extending three or four feet beneath the surface, in no wise protected from surface drainage and partially filled in many cases with stagnant, slimy water. There is absolutely nothing in such case to prevent this surface drainage from following down the casing of the well and contaminating the source of water supply. All wells, whether driven or otherwise, should be thoroughly protected from any possibility of surface contamination. The common drinking cup, the filthy, saliva-coated, germ-laden, tin cup or dipper, now very properly known as "the death cup," together with the equally filthy, rusted, plague-spotted water pail, should not be tolerated for one day in a schoolroom. Wherever possible the bubble fountain should be installed. Where fountains are

impossible, an earthen or enameled water container with a spring faucet should be used, and each pupil should have a marked cup for his own use and that only. The question of each pupil using only his own cup is a matter of discipline in connection with which the responsibility of the teacher is apparent. No common towel should ever be allowed in a school. Contagious skin diseases and affections of the eye find ready interchange by use of the towel. Sanitary paper towels are both cheap and convenient. No other kind should be considered.

(f) *Heating and Ventilation.* (a) *Heating.* The temperature standard for schoolrooms given in the Sanitary Schoolhouse Law as a minimum is 70 degrees. As a matter of fact 70 degrees should be the maximum. A uniform temperature of 68 degrees, with the air of a schoolroom properly humidified, is far better than 70 degrees. Two thermometers should be placed in every schoolroom, one at the farthest point from the stove, registers or radiators. The temperature should not vary more than three degrees in any part of the room. The methods of supplying heat are two: direct and indirect. By direct is meant when the heat supplying force is contained within the room itself as a stove or the registers of a steam or hot water plant. When a stove is used, great care should be had to see that no gases are given off and that the heat is not too intense for those nearest the stove. For the protection of pupils who must sit near the stove and in order to prevent them from becoming "over done," fire screens should be used. These screens should always be constructed of two layers of metal with a layer of asbestos or space for air between. Indirect heating consists in warming fresh air outside the room then introducing this warmed air into the room. Three methods of indirect heating are in general use: steam, hot water and warm air furnaces. One or the other of these indirect systems should always be used when possible. The important point favoring the warm air system is the simplicity of its operation. After all, the most important part of any indirect system of heating is the janitor or engineer in charge. The average school janitor is selected because of his inability to perform any other work and because he can thus be employed at a saving of dollars and cents, too often without regard for the health and lives of the school pupils. A janitor should always be selected with as much care as a teacher, should be fully equipped for his work and invariably sober and industrious.

(b) *Ventilation.*—In spite of the fact that the dangers of illy-ventilated rooms have been widely discussed by sanitarians and educators and the State Board of Health has passed rules and issued orders protesting against lack of fresh air in schoolrooms, it is nevertheless true that in hundreds of schoolrooms in Indiana the air is not so pure as in the ordinary stable. Most of these rooms are in buildings constructed years ago when no other means were provided for changing the air than is afforded by doors and windows. The Sanitary Schoolhouse Law seeks to provide better ventilation in the schoolrooms of the future by establishing a fixed compulsory standard of fresh air supply. The problem of supplying fresh air would seem simple enough, for there is an abundance of fresh air in the world. The difficulty comes in bringing about a constant exchange of outside fresh air for inside foul air without causing draft. Two methods of artificial ventilation are permissible, the gravity system by which the currents of air are kept in motion by the difference of weights of hot and cold air; and the fan system by which the air is circulated in the rooms by means of a forced draft from a rotary fan. There can be no question as to the relative merits of these two systems, especially in buildings with more than six rooms. The fundamental principle of school-room ventilation has been expressed as follows: "If a given amount of air is required in a given space, in a given time, it must be put there, not allowed to go there." Because the rotary fan will "put" a given amount of air whenever and wherever it is required, the fan system of ventilation should always be installed in any school building containing more than six rooms. In smaller buildings, those containing six rooms or less, a system of gravity ventilation with openings of sufficient size to admit fresh air and with ample ducts to carry off the foul air will be found satisfactory. All openings for the intake or exit of air should lead directly to the outside of the building, never opening into the basement or attic, as can now be found in hundreds of school buildings throughout the State.

(g) *Water Closets and Outhouses.* The proper placing of water closets is often a difficult matter and one about which there is much difference of opinion. Whenever possible, closets should be placed in the building. When closets are located outside the building, many children will refuse to respond to the call of nature, on account of exposure to cold, and in consequence of delay will suffer from constipation, hemorrhoids, etc. The best closet for all grades

is one that is flushed every time it is used, either by means of a chain and pull or by a mechanical device that operates when the weight of the body is taken from the seat. The principal source of trouble is to be found in securing a satisfactory urinal for boys. This should always be constructed of impervious material, such as slate, cement or porcelain, should be trough-like in shape with a continuous and strong flow of water through it. The floor should be of a similar impervious material for at least six feet from the urinal with a perceptible slope forward toward a drain, in order to be easily and thoroughly flushed. Where sewerage is impossible a dry closet system, if properly installed, will be found satisfactory, especially if burned out every day. In country schools the dry earth closet, if properly attended, serves every purpose admirably. Here again, the question of proper care of closets of whatever kind is largely a matter of discipline, for which the teacher is responsible. Children should be taught that nuisances in closets, whether from a moral or sanitary point of view, will not be tolerated.

Disinfection.—The various so-called “automatic” disinfecting appliances so frequently found in schoolrooms and so highly recommended as a sure preventative of all contagious diseases (by the agent) are a delusion and a snare. Mostly (when they do anything) they give off a disagreeable odor, which, like the ancient asafœtida sack, creates a false sense of security. All such appliances are absolutely without value. Many janitors and school trustees place too much reliance on disinfectants, seeming to think that no matter how filthy a corner may be, a liberal sprinkling of lime or wood ashes will immediately purify it. The best disinfectant always and everywhere is cleanliness.

Scrupulous cleanliness should be the “first relief” in every case, to be applied in advance of other means.

The Janitor and His Duties.—The janitor is by far the most important official connected with the school. As has been indicated above, the efficiency of any artificial system of heating and ventilation depends fully as much on the knowledge and care of the janitor in charge of the system as upon the mechanical correctness of the system itself. It seems more than strange that school authorities will often place the welfare of the children of a community in the hands of a man so ignorant and incompetent that the same school authorities would not trust a team of horses in his care at any price. In the first place, janitors should be well paid, for their work is important. In the second place the qualifications of a

janitor should be scrutinized as carefully as the qualifications of a teacher. In the third place, the instructions issued to janitors should be specific, covering every part of their work, and the work should be systematized and thoroughly understood by the school officials and janitors. The janitor should not live in the school building. The necessary accompaniments of housekeeping, such as cooking, laundry work, domestic pets, etc., have no place in the average school building and are a source of annoyance and positive injury. Dry sweeping and feather dusters should be prohibited. No sweeping should be permitted, either in corridors or rooms when school is in session. Janitors should be thoroughly instructed in all the requirements of heating and ventilation and should thoroughly understand every mechanical appliance connected with the system under their care. An anemometer (an instrument for measuring the volume of air entering or leaving a room) should be a part of the equipment of every school corporation, where artificial ventilation is in use. Janitors should not be permitted to leave brooms, stepladders, or tools of any kind, standing in corridors, stairways or behind doors. Besides forming convenient places for the accumulation of dust and dirt, such things in hallways and exits might easily become a serious obstacle in the way of escape in case of fire.

Pencils.—The argument against the common drinking cup and the common towel, applies with equal force to the common use of pencils. Frequently pencils are given out to pupils in the morning and taken up in the evening. No system of marking these pencils can prevent mouth contamination and possible interchange of pencils. When a pencil is given to a pupil, the pencil should be the individual property of that pupil, to be kept in his desk and not taken up and given out again by the teacher. The slight increased expense incurred in replacing pencils carried away and lost is trivial, when compared with the danger of transmitting disease from one pupil to another in the indiscriminate interchange of "chewed" pencils.

Care of Floors.—The use of oil on schoolroom floors will overcome the "dust nuisance" to a very great extent. Experiments show that proper application of oil decreases the bacteria count in the air and dust of schoolrooms from 55 to 250 per cent. All schoolroom floors should be oiled from two to four times a year as required.

Humidity of Air.—The air of schoolrooms should always be "humidified," that is, moisture should be added. Where heating

and ventilating systems are installed, an air washing device should be included in the system. When "direct-indirect" heating is used, shallow pans to hold water for evaporation placed on the radiators, answer a good purpose. Where stoves are used, a kettle containing water should be kept on the stove.

No law can create efficiency, but may point the way to efficiency. An intelligent interpretation of the sanitary schoolhouse law, with an intelligent application of the principles of school hygiene contained therein will do much to make the schools of Indiana what they should be, namely, the crystallized intelligence and sentiment of the State toward its future citizens.

RULES GOVERNING THE REPORTING AND EPIDEMIOLOGICAL STUDY OF EPIDEMIC POLIOMYELITIS.

The following rules governing the reporting and epidemiological study of epidemic poliomyelitis were adopted in each separate part and as a whole:

Rule 1. It shall be the duty of the attending physician to immediately report every case of epidemic Poliomyelitis occurring in his practice to the health officer having jurisdiction. Cases occurring within incorporated cities and towns shall be immediately reported to the health officer of such incorporated cities and towns. Cases occurring without incorporated cities and towns shall be immediately reported to the health commissioner of the county.

Rule 2. It shall be the duty of all health officers to immediately report to the State Board of Health, at Indianapolis, all cases of epidemic poliomyelitis occurring within their jurisdiction. Such reports shall give the name and address of the patient and attending physician and shall be forwarded immediately by telephone, telegraph or mail at the expense, if necessary, of the State Board.

Rule 3. It shall be the further duty of all physicians and health officers to assist the State Board in every reasonable way in the epidemiological investigation of this disease, particularly by giving immediate notice of cases as above provided, by making prompt history reports on blanks to be provided for such purpose, and by assisting the epidemiologist of the disease should any such occur.

EXTENSION OF CONDEMNATION OF ACTON SCHOOLHOUSE.

WANAMAKER, IND., July 24, 1911.

State Board of Health:

GENTLEMEN—I write you this letter concerning the school at Acton, Ind. As you will remember, you condemned the Acton school building some time last year, to become effective June 1, 1911. I find it will be utterly impossible for me to erect a new school building at Acton this

year. As you will remember, we are short of funds, and it was necessary for me to sell the old building at New Bethel before I could commence work on the new building at Acton. It has only been during the past thirty days that I sold the building at New Bethel, and as I intend to erect a new building at Acton on the ground now occupied by the old building at said place, it would interfere with the school this year. It is my intention, if it meets your approval, to have plans drawn and contract let for said building during the latter part of the winter so that work can be commenced promptly upon said building at the expiration of the coming school year.

Kindly let me hear from you.

HENRY J. BROWN,
Trustee Franklin Township.

After consideration of Mr. Brown's letter as above set forth, it was

Ordered: The date of condemnation of the Acton schoolhouse is extended to June 1, 1912.

Ordered: Mr. H. E. Barnard was appointed a delegate to attend and represent the State Board at the Fifteenth Annual Convention of the Association of State and National Food and Dairy Departments at Duluth, August 21-24, his expenses to be paid from the laboratory funds.

MR. BARNARD'S LETTER.

INDIANAPOLIS, IND., July 25, 1911.

Dr. J. N. Hurty, Secretary Indiana State Board of Health, State House, Indianapolis, Ind.:

MY DEAR DR. HURTY—Will you kindly bring to the attention of the State Board of Health at its next meeting the following propositions which concern the work of the department and the expenditure of its funds for the coming fiscal year?

Because of the fact that we have carried one less food chemist since the resignation of Mr. McAbee a year ago, and the lessened expense of the inspection force due to the collection of a fewer number of samples; that it has not been necessary to purchase much additional apparatus or large stocks of chemicals; that the laboratories are now well equipped, we have at our disposal in the appropriation for the Food and Drug Laboratory much more money than is usual at this time of year. The same is true of the funds of the Water Laboratory, due to the fact that between the leaving of Mr. Brewster and the employment of Mr. Craven, we carried no high salaried assistants in that department. We shall therefore be able before the close of this fiscal year to get a sufficient stock of chemicals, apparatus and other supplies to carry us for some time. Furthermore, on the first of October an additional appropriation of \$5,000 becomes available. On the first of January the Weights and Measures Law goes into effect, and it will be necessary for us then to purchase a complete equipment of weights and measures. This will

cost us about \$1,000. With the extra \$4,000 I suggest the appointment of an inspector who can assist in the enforcement of the Weights and Measures Law. This has in a way been anticipated by the appointment of John T. Willett as inspector at a salary of \$1,000 per year. His expenses will be approximately \$750 a year.

With the remaining funds I recommend that Mr. Wm. D. McAbee, long an employe of the department and a man whose ability as a chemist is well known to you, be employed at a salary of \$100 a month to assist Mr. Bishop in the Food Laboratory.

I recommend also the employment of an assistant to Mr. Miller, who is quite unable to longer conduct his department without assistance, at a salary of \$900 a year. For this position I recommend the appointment of John C. Diggs, a graduate of DePauw University, a professor of chemistry at the Lafayette high school for two years and who since June has been working in the laboratory at no salary for the sake of the experience and training he could acquire. Mr. Diggs has shown himself to be an intelligent, energetic, conscientious and efficient man, and I am sure that we will be most fortunate if we can secure his services. I recommend that both Mr. Diggs and Mr. McAbee's appointment be dated from August 1st, as I understand there are sufficient funds in the Food and Drug Department to authorize such employment, even before the increased appropriation becomes available.

I furthermore recommend that the salary of Mr. Miller be increased from \$1,400 to \$1,500 a year. Mr. Miller is worth much more than this, and I regret that the size of our appropriation does not allow me to recommend an even larger increase in his salary.

I wish to call to your attention the fact that Mr. Bishop is also worthy of an increased salary. The same is true of our stenographers, but in view of the condition of the budget for next year I do not care to make any recommendations for increased salaries other than those above referred to.

The extra expenses due to the employment of an additional inspector, two additional chemists, the purchase of standard weights and measures, etc., amount to about \$4,950, or \$50 less than the increased appropriation. Our success this past year in keeping down expenses makes me confident that we shall be able to meet all the expenses of the coming fiscal year with the department organized and salaried as at present and with the addition of the new force as recommended.

Assuring your honorable Board of my desire to operate the Food, Drug and Water laboratories along lines entirely in sympathy with your ideas and to expend the funds of the department as efficiently and at the same time as economically as possible, I am.

Very respectfully yours,

H. E. BARNARD.

After consideration of Mr. Barnard's letter and discussion of the matter, the Secretary appointed Mr. Wm. D. McAbee to the position of second assistant chemist in the Pure Food and Drug Department at a salary of \$100 per month, the same to be paid

from the funds of the department. The appointment was confirmed, employment to begin August 1, 1911.

Ordered: Mr. Iva Miller, drug chemist, shall after August 1, 1911, be paid at the rate of \$1,500 per annum for his services.

The Secretary announced he had appointed Mr. John C. Diggs as assistant drug chemist at a salary of \$900 per annum, and requested the appointment be confirmed.

Ordered: The appointment of John C. Diggs, by the Secretary, at a salary of \$900 per annum, as assistant drug chemist, is hereby confirmed, the appointment to begin August 1, 1911.

REPORT OF DR. W. F. KING, ASSISTANT SECRETARY, OF HEALTH
WEEKS HELD IN NORTHERN INDIANA, BEGINNING MARCH
27TH, AT FT. WAYNE.

Health Week in Ft. Wayne was held under the auspices of the Allen County Antituberculosis Society. The Board's Health Exhibit was placed in the Library Hall, and in addition to this exhibit there was shown the U. S. Government Meat Exhibit, in charge of Dr. W. F. Butler of Lafayette. Dr. Hurty, H. E. Barnard, and F. W. Tucker, were in attendance at this exhibit, and each contributed largely to the success of "Health Week" in Ft. Wayne.

April 3d.—Health Week in Angola began Monday, April 3d, and continued until Friday, April 7th. The tuberculosis and pure food exhibits were placed in the court room and corridors of the courthouse in charge of Inspector Tucker and myself. In addition to this exhibit a tuberculous meat exhibition was shown from Wednesday until Friday in charge of Dr. Butler of Lafayette and Dr. Gillie of Ft. Wayne, representing the U. S. Bureau of Animal Industry. The attendance at these exhibits was large from the first. Lectures were given in the courtroom each afternoon and evening, with the room crowded at each lecture. A lantern was placed in the courtroom so that all lectures on the various subjects were illustrated. In addition to the talks given at the exhibit room, I attended the chapel exercises at the Tri-State College on Tuesday morning and addressed the students to the number of about two hundred. On Wednesday morning, I went to Pleasant Lake at the request of the township trustee and addressed the teachers and high school pupils. On Wednesday evening I gave an illustrated lecture on tuberculosis at the opera house before an audience that

filled the house to "standing room." On Wednesday afternoon at 4:00 o'clock, a special meeting was held for children, which was largely attended by children from the schools. On account of the schools having been dismissed for the week, no opportunity was had for talks to the high school pupils.

The Angola meeting was one of the best held so far in the way of "Health Weeks." Much credit for the success of the meeting is due to Dr. Lane, County Health Commissioner, who was untiring in his help. Among County Health Commissioners Dr. Lane must be ranked as one of the very best. Dr. Sutherland, City Health Officer, Dr. Creel of the city board, Mayor Owen and many others gave valuable assistance, and by their help contributed largely to the success of the meeting. Dr. Coover, State Veterinarian, was also present one day and took part in the program.

April 10.—Health Week in Lagrange: In Lagrange the exhibit was placed in the Circuit Court room at the court house, where it was daily visited by a large number of people throughout the whole week. Mr. Frank W. Tucker had charge of the Board's Pure Food Exhibit, and rendered valuable services throughout the entire week. The following special meetings were held and special addresses made by the Assistant Secretary: On Tuesday morning an address before the Lagrange high school, on Wednesday evening an illustrated lecture to the various women's clubs of Lagrange; on Thursday afternoon an address to the township trustees. On Friday afternoon, a visit was made to the Howe Military School at Howe, Ind., also inspection made of the new school building they have in course of construction at Howe, and an address given before the Howe public school.

May 17th.—Health Week in Goshen, beginning May 17th. At Goshen the exhibit was placed in the rest room of the court house, with Mr. F. W. Tucker in charge of the pure food exhibit. The attendance in Goshen was splendid throughout the entire week. The Assistant Secretary made addresses before the Goshen high school, before the women's clubs at the library building, and before the students of the Goshen Collège. In addition, with Dr. Snapp, a sanitary inspection was made of the high school building and two of the grade school buildings of Goshen, where a number of changes looking toward the improvement of the condition of this building were suggested. On Thursday evening, the Assistant Secretary gave an illustrated lecture on tuberculosis in the Goshen opera house, which was attended by a large audience. Inspector

Tucker made a number of sanitary inspections of food-producing establishments during the week, in company with the local health officials.

Health Week in Elkhart, beginning April 24th. In Elkhart the exhibit was placed in a vacant business room on the main street of the city, where it was attended by several thousand people during the week. Special addresses were made by Assistant Secretary before the Elkhart high school, before the women's clubs at Library Hall, and on Wednesday afternoon the meeting of the township trustees was held in the office of the trustee of Elkhart Township. On Thursday evening, lecture was given by the Assistant Secretary, on tuberculosis, at the Elks' Temple, which was largely attended. Inspector Tucker, as usual, made a number of inspections of food-producing establishments in company with the Elkhart city inspectors.

May 1st.—Health Week in South Bend, beginning May 1st. At South Bend the exhibit was placed in the council room at the city building. Several addresses were made by the Assistant Secretary before the South Bend high school and before two of the graded schools of the city. Illustrated lectures were given each evening at the said city building. A number of inspectors were made by Inspector Tucker, accompanied by John T. Willett, South Bend city inspector. I wish to add that Inspector Willett devoted the entire week to the exhibit and was a very great assistance in making the South Bend meeting a success. At the close of Health Week in South Bend, the exhibit was packed and sent to the office of the State Board.

May 3.—On this date the Assistant Secretary, while at South Bend, made a visit to Ligonier, Ind., in response to a petition from the school board of Ligonier, and inspected the Ligonier school building. This inspection was made in company with the members of the school board, and at the close of the inspection, a conference was held with the school board, at which the Assistant Secretary gave his views of the schoolhouse situation in Ligonier, and recommended that the present building be remodeled in such way as to conform to the sanitary schoolhouse law, and to provide for increased high school facilities. These suggestions met the approval of the school board and the board agreed that steps be taken to carry out these suggestions at an early practicable time.

June 29th, in response to a petition I visited Frankfort, and in company with Dr. C. A. Zinn, County Health Commissioner, in-

spected the Milner slaughterhouse, where a number of recommendations were made with a view of improving the sanitary conditions. Also made a sanitary inspection of a schoolhouse in Boyleston, in Clinton County, and report of inspection has been submitted to the Board for their action. In the afternoon of the same day, in company with Dr. Zinn, I made a sanitary inspection of the sewer for the city of Frankfort on the county farm and adjoining the Slifer farm. As a result of this inspection it was recommended that the city of Frankfort employ a competent sanitary engineer to lay out an efficient sewage disposal plant, thus doing away with the bad pollution of a stream that flows through the county farm and through the Slifer farm, which is now a source of great nuisance to the owners of these farms. This report, with recommendations as stated, was sent to the attorney for the petitioners to be presented to the city council of Frankfort at their next meeting.

Sanitary report of the school building at Richmond, Ind., by W. F. King, February 28 to March 3, 1911:

At the request of the city health officer, Dr. T. Henry Davis, and the school officials of the city of Richmond, and acting under the authority of the Indiana State Board of Health, I have made a sanitary inspection of the ten public school buildings of Richmond. This inspection began Tuesday morning, February 28th, and was completed Friday, March 3d. In this inspection note was taken of the following in reference to each building inspected: Heating, ventilation, lighting, seating, sanitary conditions both inside and outside of buildings, safety, protection against fire, capacity and number of pupils in classrooms, etc. Teachers and janitors were questioned in regard to every feature of the school administration within their knowledge and responsibility, and every detail pertaining to the sanitary conditions of the school buildings and physical well-being of the pupils in the school was carefully investigated. The widest possible publicity was permitted and invited in every feature of the inspection, while full and free co-operation was extended by every official, teacher and employe connected with the schools. This report embodies a full and comprehensive statement of all conditions included in the inspection as they have appeared to the inspector, together with such recommendations as in the opinion of the inspector are demanded, for which recommendations the inspector alone is responsible. By way of explanation it may be stated that the standard of comparison used in this report is the standard adopted by the Indiana State Board of Health in the rules of the Board governing the construction of new school buildings. These rules were incorporated into law by the recent General Assembly and are now the standard of the State of Indiana in construction of all new or remodeled school buildings in the State. This is admittedly a high standard. None too high for the physical and mental welfare of school pupils, easy to attain in the construction of new buildings, but difficult

of attainment in old buildings, when already constructed without reference to any standard.

Nine of the Richmond buildings are equipped with the fan or "blower" system of forced ventilation. This system is recognized as standard everywhere. The necessary equipment for carrying out this system in the nine buildings referred to is complete. Hence, it is deemed unnecessary to discuss the "system" installed in these buildings further. The following recommendations when carried out will add very materially to the efficiency of the ventilation contemplated in the design of the equipment installed. Since the efficiency of a fan system must depend upon its adjustment to the varying conditions of outside temperature, prevailing air currents, distance of rooms from fan, etc., and since in the nine buildings mentioned the control of this adjustment is with the janitors, the janitors should be thoroughly instructed in all the details of control and adjustment in the system under their care. Given an ample volume of air entering the plenum chamber with ducts of ample capacity leading to the different rooms of the building, each room should receive an ample proportion of air. If the distribution of air in the building is not equal, the fault is one of adjustment of mixing dampers, for which the janitor in control should be held responsible. It is recommended that a school of instruction under the supervision of the school superintendent and head engineer be instituted, to the end that each janitor may have a practical knowledge of the equipment under his care, and then be held to a strict account for the efficiency of the ventilation in this building. It is further recommended that frequent anemometer tests be made of the volume and distribution of the air in the different rooms of the several buildings, in order that a relative standard for each room may be fixed as a basis by which the efficiency of the ventilation may be tested at any time. Specific recommendations in regard to the ventilation in different buildings are made as follows: The foul air flues in the Garfield annex to the next high school building, the Vaile building, and in the Whitewater building should be extended from the attic floor through the roof, or ample capacity roof ventilators, with exhaust fans if needed, should be installed in each of these buildings. The vent in the stair landing of the Garfield annex, now closed, should be kept open. In the Warner building the vents which were a part of the former Smeade system should be kept open as an additional aid to the efficiency of the present system. At the Whitewater building it is recommended that the thermostats be inspected and adjusted in order that they may serve the purpose for which they were intended, that of automatically regulating the temperature of the room. That these thermostats are not working properly is shown by the fact that the temperature in different rooms in this building vary from 78 degrees to 85 degrees. At the Starr building the total intake of air is 29,000 cubic feet per minute, or about 65 cubic feet per minute for each pupil in the building. This is an ample supply which, after allowing for leakage and air in corridors and apartments other than classrooms should give a supply in every classroom in excess of 30 cubic feet per minute for each pupil, which is the minimum standard. The supply in the rooms tested in this building varied from 20 cubic feet per pupil, the lowest, to 110 cubic feet, the

highest. This condition is due only to an unequal distribution, which should be easily avoided by the intelligent adjustment of the dampers in the air ducts. At the Whitewater building, the total intake of air is 21,480 cubic feet, or 71 cubic feet per pupil. In the rooms tested the supply varied from 32 cubic feet per pupil, the lowest, to 140 cubic feet, the highest. Here again the unequal distribution of air noted is due to lack of adjustment of dampers in the conducting pipes. At the Vaile building, the total air supply is 10,800 cubic feet, or 38½ cubic feet per pupil. This supply is insufficient to maintain a minimum of 30 cubic feet per pupil in classrooms. The rooms tested varied from 18 cubic feet to 28 cubic feet per pupil. It is recommended that an additional window be opened and connected with the plenum chamber, which will add approximately one-third to the air supply, sufficient to maintain a supply in all classrooms in excess of the minimum standard. At the Sevastapol school, the gravity system of ventilation is in use. As a fundamental principle in all ventilation, it may be stated that if a given amount of air is wanted in a given place and at a given time, it must be put there rather than allowed to go. Gravity ventilation can not be efficient in buildings of more than four rooms. To show the absolute uncertainty of gravity ventilation: in a room in the Sevastapol building the test showed a supply of 29 cubic feet per pupil with the control on warm air, and 10 cubic feet per pupil with the control on cold air. It is recommended that a fan system be installed in this building. At the Garfield building there are no vent flues in five classrooms and the office. Ventilation is, of course, inadequate in these rooms. It is recommended that vent flues extending through the roof be constructed and that the architectural harmony of the building be sacrificed if necessary, pure air being of greater importance than beauty of design. Rooms 16 and 21 of this building are basement rooms used as classrooms. In room 21 the capacity based on the seating is 138 cubic feet per pupil, which is further reduced by the large ducts in the room. The light is insufficient. The same is true of room 16 both as to capacity and light. Basement rooms are always objectionable for schoolrooms. It is recommended that these rooms be discontinued as classrooms at once.

The new high school building is a model in practically every way. Judged by the standard used in this report, the lighting is slightly below standard. This is due to the fact that small glasses have been used in the windows so that much of the window space is taken up with the glass frames. The corner rooms of the building being lighted from both sides do not fully comply with the standard, in that crossed lights are possible in these rooms. In room 38 the air supply was found insufficient for the twenty-one pupils in the room at that time, and of course, insufficient for twenty-eight pupils, which is the capacity of the room. It is recommended that the use of this room should be limited to fifteen pupils. In every other way the high school building meets the highest standard of requirement and is a building of which the city of Richmond should be proud, being one of the best arranged and best adapted high school buildings in the State. In regard to the lighting in all the other buildings outside the high school building, it may be said that the lighting is below standard in every case. This also may be said of practically every school

building in the State of Indiana that has not been constructed or remodeled within the last four or five years. The use of prism glass in windows adds very materially to the efficiency of the light, as can easily be noted in the buildings at Richmond, in which prism lights are used. It is recommended that in all buildings wherever the light is insufficient that prism glass be used, in order to increase the diffusion of the light.

At the Vaile building, where the light is below standard at best, some of the windows are banked with potted plants and flowers to such an extent that in some cases fully one-third of the light space is taken up by these plants. It is recommended that all flowers and plants be removed from the windows, and either kept in the corridors or dispensed with entirely.

In regard to the seating: All buildings are equipped with solid seats and desks. The superiority of adjustable seats and desks, especially in primary grades, is everywhere recognized. Numerous cases can be pointed out in any schoolroom where adjustable desks are not used, of children who are undergoing continuous physical deformity on account of seats that are of improper size or of improper distance from the floor. It is recommended that in the graded rooms of the Richmond schools adjustable seats and desks to the extent required by law (20 per cent. of the total number) be installed as rapidly as conditions will permit.

In a number of cases the toilets were found not to flush satisfactorily, and in the case of the boys' sanitary at the Starr building an odor was plainly noticeable. In this case the odor was due to bad plumbing. It is recommended that the plumbing in the boys' sanitary at the Starr building, and at the Whitewater building, should be overhauled at once, and that the plumbing in other buildings should be given attention from time to time, as may be needed. In addition, the boys' sanitary in all buildings, not now so provided, should be supplied with floor drains, provided with traps connected with the sewer, in order that more efficient cleanliness may be maintained in these apartments. At the Sevastapol building it is recommended that sewerage be established in connection with the toilets, thus doing away with the objectionable cesspool now in use.

Although not directly connected with hygiene or sanitation, attention is called to the following conditions because of their bearing upon the safety and welfare of pupils in the schools. At the Finley building, the stairway leading to the second floor, 42 inches in width, with a double turn between the second floor and the exit of the building, might easily prove a source of danger in case of fire. This building should be equipped with proper fire-escapes and, if possible, a wide stairway between the two floors should be constructed. In this connection also attention is called to the fact that janitors are in the habit, in some cases, of obstructing the entrances to buildings by placing therein ladders, step-ladders, and implements of various kinds. All entrances and exits to school buildings should be kept absolutely free and unobstructed at all times. The recommendations above given cover all conditions pertaining to the school buildings themselves in which recommendations are deemed necessary. The nine graded buildings in Richmond, being of old construction, and having been built without reference to any definite standard, of course do not meet the requirements of standard modern construc-

tion. Unless this fact is taken into consideration, a comparison based upon present-day standards is misleading. These buildings and their equipment, with the exception of the Sevastapol building, when compared with buildings and equipment now in use in other cities of similar class, make a very favorable showing. Progress, however, is the universal order in schoolhouse construction and equipment. From time to time, as the finances of the city of Richmond will permit, these buildings should be replaced by buildings of modern construction, in which are incorporated all the provisions concerning light, heating, ventilation and seating required by modern standards and which are absolutely necessary, in order to best conserve the physical, mental and moral welfare of school children. That such improvements and changes will be made, and as rapidly as possible, is argued by the fact that the changes and improvements already made have kept pace with the advance in knowledge along lines of school hygiene and sanitation.

The inspection took note of features aside from those pertaining strictly to the school buildings. Some of these features were hygienic, others were not. This part of the inspection was deemed necessary, in view of peculiar local conditions. In one or two rooms, slates and sponges are in use. These should be dispensed with promptly. In certain cases in two schools, pencils are furnished pupils by the school officials. This practice seems to be necessary in certain schools of every city. It was noted, however, that intelligent effort was made in every case to prevent the promiscuous use of these pencils and that in so far as possible each child was given the same pencil every day. It is the notion of the inspector that pencils furnished pupils by a school board should be owned by the pupils and kept in their desks, as books are kept, thus obviating the promiscuous taking up and giving out again of same. Sanitary drinking fountains have been installed in a number of buildings. In every case the fountains are well adapted to the use of the pupils. No reasonable argument can be brought against the sanitary drinking fountain, and it is recommended that these fountains be installed as rapidly as possible in every building in the city. It was found that teachers were at liberty to open windows or doors at any time when deemed advisable; that windows and doors in all rooms were frequently opened at recess and noon periods, and that no instructions against this practice have been issued by any one. In this connection, it is recommended that teachers should acquaint themselves thoroughly with the system of heating and ventilation in use in their building, in order that they may co-operate intelligently in maintaining proper heat and air in their classrooms. So far as was disclosed in the inspection, the personnel of the teaching force and the spirit of co-operation between teachers and school officials compares very favorably with that of cities of equal class.

In this inspection also janitors were questioned very closely concerning the methods adopted in care of their buildings. The matter of the janitors having practical knowledge of the system of heating and ventilation under their care has already been touched upon. Without making comparisons, and solely in the interest of better conditions, it may be stated that the heating and ventilation in the Baxter building were found to be almost ideal. The temperature in the various rooms was uniform,

the air in the various rooms was of relatively equal distribution and every part of the entire heating and ventilating equipment was found to be nicely adjusted and in splendid working order. A similar ideal result is possible in all the buildings that have the fan system. It was found that brushes are used in sweeping and that dust down was used upon the floors. This is commendable. It is recommended, however, that janitors be instructed to do their sweeping only after the school session is closed in the afternoon, and that in any case where the janitor can not perform the duties expected of him without sweeping halls and stairways while the school is in session that additional help should be employed.

In conclusion, the inspector ventures to express the hope that his work and this report may result in good to the Richmond schools. Richmond is noted as a manufacturing city, with manufactured products of great value. The most valuable product of the city, however, is the boys and girls in the public schools. No consideration of finance or prejudice of opinion should ever stand in the way of progress in an institution so vital as the public school. School officials, teachers, patrons, and citizens generally, should aim to keep in touch intelligently with every feature of the school administration, and when to this intelligent comprehension of school conditions is added mutual confidence and co-operation, the schools must progress and the future glory of the city is assured.

Thanks are due to County Health Commissioner Dr. J. E. King, Head Janitor Dingley, and the press of Richmond, for co-operation and kindness shown throughout the inspection, and the same is hereby gratefully acknowledged. Respectfully submitted,

DR. WILLIAM F. KING,
Assistant State Health Commissioner.

Adjournment: As the time was late, and as other duties oppressed the members, and as all the business laid out for the session was not completed, adjournment was taken until called by the President and Secretary.

SPECIAL MEETING OF THE STATE BOARD OF HEALTH.

May 5, 1911.

Meeting called to order by President Wishard at 2 p. m.

Present: Drs. Wishard, McCoy, Davis, Tucker, Hurty.

The President announced the object of the meeting was to consider rules for governing cold storage and to attend to any other business which might come before the Board.

Minutes of last meeting read and approved in each part and as a whole.

The following letter from J. G. Kepner, Trustee of Jackson Township, Hamilton County, was read:

CICERO, IND., R. R. 12, May 4, 1911.

State Board of Health, Indianapolis, Ind.:

GENTLEMEN—After the condemnation proceedings of the State Board were read to me by the County Health Commissioner, with reference to the Arcadia schoolhouse, I immediately called a meeting of the Advisory Board of Jackson Township, Hamilton County, Indiana.

After careful consideration we are all in favor of the erection of a good building, but as there has been no levy of taxes to meet the same and the time is short until the beginning of the next term of school, time is required for location plans and thirty days for advertising, and as we are going to use the old brick out of the old building into the new, we are of the opinion that the building could not be completed until the first of next year, and there is no place to begin the next term of school if the same is built this year.

Under these conditions, we are asking you for an extension of time until June 1, 1912. In the meantime we will have the contract let and ready to commence the building next spring at the close of school.

Very truly yours,

J. G. KEPNER,
Trustee Jackson Township.

After discussion it was

Ordered: That the condemnation be extended one year.

COLD STORAGE MATTERS.

The following letter from Mr. Barnard, State Food and Drug Commissioner, was read and ordered spread of record:

INDIANAPOLIS, IND., May 3, 1911.

State Board of Health, Indianapolis, Ind.:

GENTLEMEN—Rule 16, suggested for passage for the purpose of facilitating the enforcement of the Cold Storage Act, is, for convenience, divided into paragraphs. To give each paragraph a number would perhaps give the impression that too many rules were being adopted.

I call your attention to Paragraph 4. This paragraph was not included in the original draft submitted you. Since the law went into effect we have had much correspondence with warehousemen, hotels, packers and brewers, and the position taken by them that goods which are not manufactured, but in the process of manufacture are kept at a low temperature, are not in storage, is no doubt correct. This paragraph makes that matter plain.

I also submit for your consideration as Rule 17, a rule suggested by the fact that whenever a dairyman whose place of business is con-

damned finds he can not sell his milk in town, he immediately sells it to some creamery. These cases have occurred over and over again, and in order that we may be able to issue a notice to the dairymen which they will be compelled to heed, it seems to be necessary to regulate the practice by a special rule, as I can find nothing in the Pure Food Law which exactly fits the case.

I also submit for your consideration as Rule 18, another rule directed against creameries and other establishments manufacturing butter, cheese and other milk products from milk produced at dairies which have been condemned. We must be able when necessary to give specific orders to the creameries, cheese factories, ice cream factories, etc., to the effect that they must not take on milk or cream from condemned dairies.

Rules 17 and 18 will regulate the action of the dairymen and the manufacturer, and I think will be used advantageously in our crusade for sanitary milk. Respectfully submitted,

H. E. BARNARD,
Chemist, Indiana State Board of Health.

The proposed rules governing cold storage considered, and, finally, the following rules 16, 17 and 18, were adopted in each part and paragraph and as a whole:

Rule 16 passed by the State Board of Health in accordance with the provisions of Section 8, Chapter 71, Acts 1911, entitled—

"An Act for the protection of public health and the prevention of fraud and deception by regulating cold storage and refrigerating warehouses, the holding of food products stored therein and the sale of such products, and defining the duties of the State Board of Health in relation thereto."

Paragraph 1. For the purpose of the enforcement of this act, it is held that a cold storage or refrigerating warehouse is an establishment employing refrigerating machinery or ice for the purpose of refrigeration in which goods are stored for thirty days or more at a temperature of 40 degrees Fahrenheit or below. The words, "for temporary protection only" as used in Section 1 of the act shall be construed to mean the holding of food products for not more than thirty days.

Par. 2. Goods placed in cold storage or refrigerating warehouses which maintain rooms for temporary protection only, as defined in Paragraph 1, shall not be required to be marked, stamped or tagged. Such storage rooms shall keep a full and complete record of the entry and withdrawal of all food products stored therein for temporary protection only.

Par. 3. Hotels, restaurants, and all other places of business employing refrigerating machinery or ice for the purpose of re-

frigeration, whether for public or for private use, are hereby classed as cold storage or refrigerating warehouses, except in such instances where the products stored therein are held for less than thirty days.

Par. 4. Goods held at low temperature during the process of manufacture, as is the case with lager beer, and meat products being cured in pickle or dry salt, shall not be considered to be in storage as defined by this act, and need not be stamped.

Par. 5. All marking, stamping or tagging shall be plainly legible and shall show the day, month and year of the date of entrance and removal, in letters and figures not less than three-eighths of an inch in height and of a style known as 36 point Gothic No. 8. The letters or figures shall be in black or purple ink, and if the goods are tagged the tag shall be securely fastened on the package by tacks, nails, strings or glue in such fashion that it can not be detached.

Par. 6. All goods on hand at the end of nine months, as described in Section 2 of the act, shall be reported to the State Board of Health and inspected and passed as suitable for food and in accord with the provisions of the Pure Food Law, Chapter 104, Acts 1907, and the Sanitary Food Law, Chapter 163, Acts 1909, before being withdrawn. Such inspection shall be made by the inspectors of the State Board of Health, or by other persons designated by the State Food and Drug Commissioner, to make such inspection.

Rule 17. Bad Cream. Milk or cream shall not be sold which is decomposed, putrid or rotten, or which is produced by sick or diseased cows or by cows kept at a dairy which is unclean and in violation of the rules of the State Board of Health regulating the sanitation of dairies and the sale of milk and cream, or by cows kept at a dairy which has been condemned by an agent or inspector of the State Board of Health or by a county, city or town health officer, during said period of condemnation.

Passed.

Rule 18. Cream, Butter, Cheese and Other Milk Products. Butter, cheese and other milk products shall not be manufactured for sale from milk produced at a dairy if said dairy has been condemned by an agent or inspector of the State Board of Health or by a county, city or town health officer, during said period of condemnation.

Moved by Dr. Tucker, that permission is hereby granted to Mr. Barnard to purchase from the Food and Drug Fund, reports of the Lake Michigan Water Association to an amount not exceeding \$50. Seconded by Dr. Hurty.

Unanimously carried.

The following letter from the Attorney-General was read and ordered spread of record, and it was also ordered the Secretary should send a copy of the same to all auditors, requesting them to send in their portion of the hydrophobia fund to the State Auditor.

INDIANA STATE BOARD OF HEALTH,
INDIANAPOLIS, IND., April 15, 1911.

GENTLEMEN—I am in receipt of your letter stating: "The Sixty-seventh General Assembly passed an act entitled 'The Hydrophobia Law.' It provides that 5 per cent. of the excess dog tax be paid into the State treasury by the first of April, to start a hydrophobia fund. There seems to be another law which requires auditors to pay in the excess dog tax to the school fund by the first Monday in March. We write to ask if this seeming conflict can be so arranged as to secure the hydrophobia fund which the Legislature intended to raise?"

In answer, I have to say that Section 3270 Burns Statutes 1908, among other things, provides that when it occurs on the first Monday of March in any year in any township that the dog fund shall accumulate to an amount over one hundred dollars above orders drawn on same, the surplus shall be paid to the county treasurer of the county, and this surplus dog fund constitutes the county dog fund and may be drawn upon to pay claims caused by injury of stock by dogs in townships where the dog funds are inadequate to meet such claims. The distribution of this county fund to townships entitled to it is required to be made on the second Monday in March of each year. When it occurs on the second Monday of March in any year that there is a surplus left of this county dog fund after provisions have been made for the payment of all the live stock injured or killed in all of the townships of the county the surplus must be distributed for the use of the schools of the county.

Section 1 of the Act of March 2, 1911 (Acts 1911, p. 161), provides: "That the county auditor shall annually, on the first of April each year, pay to the State Auditor 5 per cent. of the surplus dog tax collected by the townships of the county. The amount received from all county auditors shall constitute a State hydrophobia fund in the State treasury: Provided, That if at the end of the fiscal year such fund shall exceed three thousand dollars (\$3,000) the surplus shall be turned into the school fund of the State."

This act contained an emergency clause, and has therefore been in full force since March 2, 1911.

In my opinion there is no real conflict between the provisions contained in said Section 3270 Burns' Statutes 1908 and those contained in the act of 1911. The county dog fund is made up of the surplus dog fund collected by the county from the townships, and the act of 1911, *supra*,

requires the county auditor to forward 5 per cent. of it to the Auditor of State on the first day of April of each year, which constitutes the State hydrophobia fund, leaving to the county 95 per cent. of the amount collected from the townships to be paid out by it as directed by said Section 3270.

The act of 1911 has been in force since March 2, and since it was in force before the time when the old law required the townships to pay to the county the surplus dog fund, and before the counties were required to distribute it, the 5 per cent. of all such sums collected from the townships should have been held for and forwarded to the State Auditor on April 1st thereafter, as required by the act of 1911. Ignorance of the law does not excuse a public officer from complying with the law, and where the 5 per cent. of such surplus dog fund has been wrongfully distributed such counties should in my opinion collect it back from the distributees and forward the same to the Auditor of State as commanded by the provisions of said act.

I have the honor to be, very truly yours,

THOMAS M. HONAN,
Attorney-General.

On motion of Dr. McCoy, Drs. Hurty and Simonds are appointed to visit the Child's Welfare Exhibit at Chicago, to represent the State Board and to secure what benefit they could for public health use in Indiana; all expenses to be paid from the proper funds of the Board.

Seconded by Dr. Davis.

Unanimously carried.

The Secretary stated that Dr. Simonds had been invited to read a paper before the Tri-State Medical Association, which would meet at Toledo, June 6, 1911, and moved that permission be given to Dr. Simonds to attend said meeting, and that his expenses be paid from the Laboratory Fund.

Seconded by Dr. Tucker.

Unanimously carried.

CURTISVILLE SCHOOL.

The following letter from J. M. Wilburn, trustee of Madison Township, Tipton County, Indiana, was read and ordered spread of record:

HOBBS, IND., April 3, 1911.

Honorable Members State Board of Health, Indianapolis, Ind.:

GENTLEMEN—Some time ago the school building at Curtisville was condemned and an order issued that after June the same should not be used for school purposes.

My purpose in writing you this letter is to ask that said order be annulled for at least one year, for the following reason: The citizens of my township have demanded a high school building to be erected in the center of the township, that the same may be reached by those entitled to high school privileges from all parts of the township. My advisory board has consented to the erection of this building, and unless you annul the order condemning the Curtisville school building I shall be compelled to abandon the erection of the central building.

At present we have been trying to have a high school at Hobbs. But this school is located on the western side of the township, and all pupils are not able to reach it. Curtisville is in the northeast corner of the township and is not available for a good high school. With the central building I can have all high school pupils in one building, and in the course of time abandon some of the small district buildings, which are old, and transport the pupils to this central school. I feel for the best interest of the pupils of the township I should be permitted to go ahead with the central building.

Awaiting your action, I am, yours respectfully,

J. M. WILBURN,
Trustee, Hobbs, Ind.

After consideration it was

Ordered: That an extension be not granted as per request of Trustee Wilburn.

Sanitary survey of Bell Union Schoolhouse, Jefferson Township, Putnam County, by Dr. J. M. King, Greencastle, County Health Commissioner, May 3, 1911.

Site.—157 x 120 feet, level, low and not drained. No way to prevent mud in wet weather and no way to drain grounds, as surroundings are on same level. No walks of any kind. Boys' closet, nothing. Girls' closet of wood, open, and not sufficient for number of pupils.

Water Supply.—None on the premises.

Building.—Substantial brick, one story. Fourteen years old. Roof good. Foundation stone, extending from 8 inches to 12 inches above ground. There are two rooms and an anteroom. The building faces the east. The rooms are each 24 feet square and have two windows in the west and one in the east, each 28 inches by 6 feet 10 inches. The seats face the east. Window-frames and casing good, also plastering and ceiling. Blackboards good and the floor is fair. Seats fairly good. Pupils, 32 in primary room and 18 in other. Also another room in town, rented by trustee, to accommodate 20 additional pupils. These rooms are heated by stoves. There is an entrance room 10 x 16 feet, which serves as cloak-room and entrance to each schoolroom. This room is not heated.

Remarks.—The light is extremely bad. The site is bad, low, flat and wet. The outhouses are insufficient. The rooms are heated by stoves. Only forty pupils should be accommodated, whereas there are about twice that number to be taken care of. Bell Union needs a four-room building, erected on a larger, better drained site.

After consideration, the following proclamation of condemnation was adopted and the Secretary ordered to serve the same according to law:

PROCLAMATION OF CONDEMNATION.

Whereas, It has been shown to the satisfaction of the State Board of Health that the schoolhouse known as the Bell Union schoolhouse, Jefferson Township, Putnam County, Indiana, is unsanitary, and consequently threatens the health and life of the pupils, and also interferes with their efficiency; therefore, it is

Ordered: That said schoolhouse, known as the Bell Union schoolhouse, Jefferson Township, Putnam County, Indiana, is condemned for school purposes, and shall not be used for said school purposes after June 1, 1911, and if any school trustee, or trustees, any teacher or any person uses said schoolhouse for school purposes, or teaches therein after the date above mentioned, he or she or they shall be prosecuted.

Any person mutilating or tearing down this proclamation shall be prosecuted.

Passed by the State Board of Health, May 5, 1911.

MARKLE SCHOOLHOUSE.

The following letter was read:

MARKLE, IND., April 6, 1911.

Dr. J. N. Hurty, Secretary State Board of Health, Indianapolis, Ind.:

DEAR SIR—In answer to yours of the 4th will say that it is the intention of the school board to build a new school building next year, and we will work to that end. In fact, we have already commenced to arrange our financial condition for the same.

Our total assessed valuation for taxation is about \$321,000, so you see that we could not under the old law raise enough money to build the kind of a school building that would meet the approval of the State Board of Health. So we started last year and raised our levy up to the limit, and we also did the same this year. Now we will have left at the end of this school year a little over one thousand dollars, and about the same next year, if no unexpected expenses come up. It is our desire to meet every request of the State Board of Health, but, in consideration of the above, we kindly ask your honorable State Board of Health to extend the condemnation now on our school building for another year, that we may prepare ourselves to build the kind of a building that would meet the approval of the State Board of Health in every respect.

If there be any additional information your board desires, if you will call me up by telephone not later than Monday evening, we will arrange to have one of the members of our board to meet with you on Tuesday, May 9th. We remain very truly yours,

MARKLE SCHOOL BOARD.

L. P. LAKEY, President.

After consideration it was

Ordered: The condemnation of the Markle schoolhouse, at Markle, Huntington County, be extended to June 1, 1912.

Inspection of an outbreak of unknown eruptive disease at Winchester by Dr. A. W. Brayton:

INDIANAPOLIS, IND., April 10, 1911.

Indiana State Board of Health:

GENTLEMEN—Pursuant to request of Secretary Hurty, I went to Winchester April 10, 1911, and met Dr. Edgar W. Rine at the depot. We went to the office of Dr. Grant C. Markle and examined the first case, which proved to be a boy of 13, with no definable disorder. He simply had a red face and a few acne pimples; his pulse was 90, and a normal temperature. There may have been some moderate but unknown infection in his case. His family was alarmed because their five children were in the vicinity of others who had been affected with a cutaneous exanthem. He was advised to stay away from school a couple of days, or until released by the health officer.

Second Group. Visited another family on the outskirts of the city—of six children, 10 years to 6 months old. No. 1—A boy, 10; red face, few spots on forehead, of twenty-four hours' duration. No fever, sore throat or other affection.

Boy 2; 8 years old; no eruption, but some sore throat; temperature two days before, 103½; sick three days; at present, no temperature or eruption.

Third. Girl, 6; had suffered emacular eruption, but had not much catarrh; no eruption at present time; no desquamation.

Fourth. Girl, 5; has a characteristic eruption; German measles; temperature, 99.2-5; pulse, 88; slight redness of the tonsils. Eruption came up without known prodromes, and in twenty-four hours spread over the body, extending to the wrists and the knees. Other children unaffected.

House provisionally corded "Scarlatina." We all three decided, on an hour's study of the case, that the disease was not scarlatina.

Third Group. Family of Orville Willis; parents and five children, 12 years to 3 months. One child of 12, with rapidly developing measles. Ordinary catarrhal symptoms, and evident morbilliform eruption. All agreed on measles; other children well.

Fourth Group. We also visited a family in which a child of 5 years was in full-blown measles. Child is doing well. Counsel unanimous.

Fifth Group. Our last visit was to another family similarly affected. The diagnosis of measles may be made as the proper one for all of the cases visited, except the one described as German measles, the determination in that case being made upon the nature of the eruption. In nearly all the cases examined the cervical glands were enlarged, and in some also the inguinal glands. In those with sore throat there was enlargement of the adjacent glands at the angles of the jaws.

I think the above report covers the clinical findings fully. The disease has been mild and somewhat atypical in character. The officers of the city and county health boards respectively exercised due study and diligence in regard to the cases, and were in sympathy with each other as to the findings.

I think that they are fully agreed as to the case, and will have no trouble with the community hereafter. Indeed, there was very little as it was. Yours very truly,

A. W. BRAYTON.

SANITARY SURVEY OF OHIO RIVER.

Dr. Hurty reviewed his report of attendance upon the meeting of the Ohio River Commission of the State of Ohio by order of Governor Marshall, and called attention to the fact that the Board had taken no action upon his recommendation that it order a survey of like character of the Ohio from the Ohio to the Illinois border.

After discussion it was

Ordered: The secretary shall direct that a sanitary survey of the Ohio River be made throughout its length bordering upon the State of Indiana; that said survey shall include such features and determinations as might seem proper, and that a full report be made.

There being no more business, the Board adjourned.

ADJOURNED MEETING.

AUGUST 30, 1911.

Adjourned meeting of the Indiana State Board of Health to attend to unfinished business and to receive and consider petitions from the commissioners of Morgan and Johnson counties, complaining of the pollution of White River with sewage by the city of Indianapolis.

Called to order at 2 p. m. by President Tucker.

Present: Drs. Tucker, Davis, Hicks, Boyer and Hurty.

The following petitions were read :

State of Indiana, Marion County, ss :

Before the State Board of Health of the State of Indiana.

Board of Commissioners of Morgan County, Indiana,

vs.

The City of Indianapolis.

The Board of Commissioners of Morgan County, Indiana, complains of the above-named defendant herein, and for cause of complaint says and would show to your honorable Board that Morgan County adjoins Marion County on the southwest and that White River flows through Marion County in a southwesterly direction and passes in its southwesterly course through Morgan County, Indiana.

Plaintiffs further complain and say that the defendants are now and have been for a number of years past and will continue to dump and turn and put and discharge the sewage and deleterious and putrid offal, and obnoxious substances into, along and upon said White River in great quantities, and in such and sufficient quantities to pollute, stagnate, and render impure and foul, and obnoxious and unfit for domestic use, the waters of said river in said Morgan County, and does so pollute and render impure by the aforesaid conduct and acts the waters of said stream to the extent that said water therein is rendered so foul and impure as to destroy the fish therein, and that said water is befouled and polluted thereby to such a degree that the odors therefrom are obnoxious and offensive and detrimental to the public health and comfort of the citizens of Morgan County, living along and upon said river and within several miles thereof.

Wherefore, The plaintiffs ask and pray your honorable Board to forthwith inquire into and investigate the charges herein made, and to notify defendant of the time forthwith and immediately thereafter of the time fixed for hearing, and upon said hearing that your honorable Board make an order against the use of said river as aforesaid by the defendant, and make such order as to purification plants to be erected by defendant as will render the noxious matters pure and harmless before the defendant again uses said river as an outlet and carrier of said matters, as well as all other power and jurisdiction and orders authorized by law to be made by your Board to render the waters of said river pure. And ask this action to be filed and joined with petition of Johnson County Board.

And for all of which your petitioners will ever pray.

HENRY K. LEE.

H. L. RINKER.

R. M. DILL.

WILL H. PIGG,

Attorney for Plaintiffs, Board of Commissioners, Morgan County, Indiana.

**CERTIFIED COPY OF THE PROCEEDINGS OF THE BOARD OF COMMISSIONERS OF
MORGAN COUNTY, INDIANA.**

Commissioners' Court of Morgan County, Indiana. Cause No. 8254.

**In the matter of the pollution of White River from the sewage of the city
of Indianapolis.**

State of Indiana, Morgan County, ss:

In the Commissioners' Court of said county, August term, 1911.

Be it Remembered, That on....., the 7th day of August, 1911, at the August term, 1911, of the Board of Commissioners of said county, Henry K. Lee, H. L. Rinker and R. M. Dill, commissioners of said county, being present, the following proceedings were had by said board, to wit:

Whereas, It has been made to appear to the satisfaction of the Board of County Commissioners of Morgan County, Indiana, that White River is now, has been and is being polluted by sewage and offal from the city of Indianapolis, and the board finds that the public health and comfort of the citizens of Morgan County are being greatly injured; be it

Resolved, By the Board of Commissioners of Morgan County, Indiana, that the county attorney, Will H. Pigg, be and is hereby authorized to confer with the Board of Commissioners or their authorized representative of Johnson County, and to prepare and file such proceedings and pleadings with the State Board of Health and prosecute a cause of action on the part of this Board as is necessary for final relief.

H. K. LEE, Pres.,

H. L. RINKER,

R. M. DILL,

Board of Commissioners of Morgan County, Indiana.

Attest: J. S. WHITTAKER, Auditor of Morgan County, Indiana.

State of Indiana, Morgan County, ss:

I, John S. Whittaker, auditor in and for said county, do hereby certify that the entries contained in the foregoing — pages are a full, true and complete copy of the proceedings of the Board of Commissioners of said county, on the day named in the matter therein set forth, as the same appears of record in my office.

Witness, my hand and the seal of said county, this 21st day of August, 1911.

JOHN S. WHITTAKER,

Auditor Morgan County.

Be it remembered that on Monday, the seventh day of August, 1911, the same being the first day of the regular August term, 1911, of the Board of Commissioners of the county of Johnson, in the State of Indiana, the following proceedings were had before said Board, that is to say:

In the Matter of the Complaint against the City of Indianapolis because of its pollution of White River.

Come now before the Board of Commissioners of the county of Johnson Milton Paddock, Thomas Paddock, J. W. Paddock, Edward Paddock, Wm. H. Paddock, Melvin Sutton, Chas. I. Sutton, Macy Patterson, Wm. H. Presser, Wm. Robinson, H. M. Kiphart, Albert Stewart and Utterback, reputable citizens of the township of White River who reside in the vicinity of White River, and before said Board make complaint of the unsanitary condition of said river because of the discharge into the same by the city of Indianapolis of sewage and wastes and other befouling and deleterious matter to the detriment of the public health and comfort and to the injury of said complainants; and the Board, having heard the evidence of said complainants and having examined the condition of the waters of said river, now finds:

That the city of Indianapolis, Indiana, is now discharging or is permitting to be discharged large quantities of sewage and wastes and other befouling and deleterious matter into White River at and in the county of Marion, which said sewage and wastes and other befouling and deleterious matter is carried by said stream into the said county of Johnson, and that said city of Indianapolis is thereby materially injuring for domestic use the character of the water into which the same is discharged to the injury of the public health and comfort.

The said Board of Commissioners therefore now hereby make complaint to the State Board of Health and charges that said city of Indianapolis is now discharging or is permitting to be discharged into White River at and in the county of Marion a large quantity of sewage and other wastes and other befouling and deleterious matter and is thereby materially injuring, for domestic use, the character of the water of said river to the injury of public health and comfort, and to the detriment of the health and comfort of all the citizens of Johnson County residing within a distance of three miles from said river.

Said Board of Commissioners therefore pray for an investigation of the conditions herein complained of by the State Board of Health and that such State Board of Health take such action in the premises as is deemed just and proper.

And the auditor is ordered to deliver to the Secretary of said State Board of Health a copy of this record under his hand and seal.

MILFORD MOZINGA.

JOHN W. CALVIN,

GEORGE W. WILD,

Johnson County Board of Commissioners.

State of Indiana, Johnson County, ss:

I, William B. Jennings, auditor of said county of the record of certain proceedings of said Board of Commissioners' court at its regular August term, 1911, in the matter of the above entitled cause.

Witness my hand and seal this seventh day of August, 1911.

WM B. JENNINGS,

Auditor of Johnson County, Indiana.

Representatives were present from Johnson and Morgan counties, also from Indianapolis, and Dr. A. S. Tilford, County Health Commission, W. H. Pigg, attorney, represented Morgan County.

Mr. Pigg made a statement telling briefly and forcibly of the awful pollution with sewage of White River by the city of Indianapolis. He also gave his opinion as a lawyer as to the antipollution law and the method under that law which should be pursued by the Board to give the relief asked for.

Mr. E. L. Branigan said he would not describe the offensive and unhealthful conditions existing in White River, for which Indianapolis was plainly responsible, but would simply state that the authorities of Johnson County demanded relief from the State Board of Health and that the Board can depend upon the fullest support from the county in any effort put forth against the nuisance under the law.

The city of Indianapolis was represented by Dr. T. Victor Keene of the city Board of Health, Dr. C. S. Woods, City Sanitarian, and Mr. H. W. Klausmann, City Engineer. All three of these gentlemen made statements to the same effect, i. e., that the city acknowledged it was committing a nuisance and was ashamed of it. That it would take some time to abate the conditions, for inspections, surveys, analyses, etc., must first be made, then the best and most economical method or methods of disposal determined, and special sewers and a disposal plant be built. That the mayor had instructed the Board of Works, City Engineer and Health Board to take action.

Dr. Tilford asked what per cent. of the citizens of Indianapolis used the sewers? The Indianapolis representatives could not give an answer satisfactory to themselves.

The President asked if any other persons present wished to speak. No one responding, the Board took action as follows:

Upon motion of Dr. Hicks, seconded by Dr. Boyers, it was

Ordered: That Mr. Barnard and Dr. King shall investigate the conditions complained of by the counties of Morgan and Johnson, concerning the pollution of White River with sewage by the city of Indianapolis, they to report by September 14, 1911

Upon motion by Dr. Davis, seconded by Dr. Hicks, it was

Ordered: The regular meeting for the fourth quarter of the fiscal year shall be held September 14, 1911, 2 p. m.

Upon motion by Dr. Davis, seconded by Dr. Hicks and Dr. Boyers, it was

Ordered: That F. A. Tucker and J. N. Hurty shall represent the State Board of Health at the International Sanitary Municipal Conference at Chicago, September 21-29, all expenses to be paid from the general fund.

Upon motion by Dr. Hurty, seconded by Dr. Davis, it was

Ordered: That the salary of Mr. Thomas as assistant in the water laboratory shall be \$60 per month for August and September, 1911.

The following Sanitary Survey of Schoolhouse, District No. 1, Pierson Township, Vigo County, made by Special State Health Commissioner, Dr. J. D. Foor, was considered:

Site: Is low, flat, no drainage, muddy, and wet in rainy weather.

Building: Frame, old, dilapidated, built about forty years ago. Single room building, 30 x 40 feet. Foundation of rotten wooden blocks. Original floor rotten and broken, with second floor laid as first.

Windows: Four on each side and all of them loose, with dilapidated frames.

Door: Is on east side, broken and split in places. Weatherboarding cracked and split and decayed in places. Has not been painted for twenty years. Plastering falling off, loose in places, ceiling about eight feet.

Chimney: Is brick set on joist in center of ceiling and in such bad condition that the house caught fire five times during the winter of 1910 and 1911. Roof is shingle, and desks bad. Outhouses miserable frame affairs and in vile condition when school is in session.

PROCLAMATION OF CONDEMNATION.

Whereas, It has been shown to the satisfaction of the State Board of Health, that the schoolhouse, known as the Vaughn Schoolhouse, District No. 1, in Section 1 of Pierson Township, Vigo County, Ind., is unsanitary, threatens the health and life of the pupils, interfering with their efficiency, therefore, the Indiana State Board of Health, according to the statutes,

Orders: That said schoolhouse, known as the Vaughn Schoolhouse, District No. 1, Section 1 of Pierson Township, Vigo County, Ind., is condemned and shall not be used for school purposes, after September 1, 1911; and, if any school trustee, or trustees, any teacher or any person, uses said schoolhouse for school purposes or teaches therein after the date above mentioned, he or she or they shall be prosecuted as provided in the law.

Any person mutilating or tearing down this proclamation shall be prosecuted.

Passed by the State Board of Health, August 30, 1911.

REGULAR MEETING.

Regular quarterly meeting of the State Board of Health, to consider the affairs of the fourth fiscal quarter and the third statistical quarter, both ending September 30, 1911.

Called to order by President Tucker at 2 p. m., September 14, 1911.

Present: Drs. Davis, Boyers, Hicks, Tucker, Hurty.

Minutes of regular meeting, held July 28, 1911, read and approved in each individual and separate part, and as a whole.

Secretary's report for the quarter ending September 30, 1911, read and ordered received and spread of record.

REPORT OF SECRETARY FOR CALENDAR QUARTER ENDING SEPTEMBER 30TH, 1911.

During this quarter the help of the various departments have enjoyed their usual legal vacation. This, of course, interferes with the amount of work done. Aside from this interference, the affairs of the Board have proceeded satisfactorily. The Laboratory of Hygiene has been especially busy with cases of hydrophobia, and the quarter has been made prominent by the opening of the Pasteur Laboratory according to law. The funds provided for this purpose by the Legislature became available on July 1st, and within a few days after the announcement was made, trustees and health officers began to send indigent patients for treatment. Up to the present time fifteen patients have been given the treatment. In the beginning virus was purchased from the H. K. Mulford Company, but later the virus was secured from the United States Marine Hospital at Washington, D. C. No accidents or ill results have occurred since we have been giving this treatment. As the law did not intend that the Secretary or superintendent of the laboratory should give this treatment, Dr. A. E. Fletcher was employed. He contracted to look after each patient who must be treated for two weeks for a per capita of \$15. Dr. Fletcher understands the work, having had training in the same. The treatments are given at the present time in the chamber of the House of Representatives, it being the only room the custodian could set aside for such purpose.

The reports of the Pure Food and Drug Laboratory will show in table the work done in that department and a view of such re-

ports will show that the said work has been very extensive and well performed. The monthly reports for the quarter will lay down the work which has been done in the Bacteriological and Pathological Laboratory, and said work has been extensive and most thoroughly done.

The superintendent of the Vital Statistics Department has endeavored to make the collection of the statistics still more accurate than heretofore, and to that end has written numerous letters and made several visits out in the State.

On account of the vacation season, the Secretary made but four visits out in the State on public health work, the same being as follows:

Connersville.—August 30th. To deliver an address at the county fair. The County Health Commissioner had arranged this address and the Tuberculosis Exhibit as a feature of the fair. Upon the date named, at the fair grounds in Connersville, I addressed a large audience, estimated to be between three and four hundred, upon the subject of the public health. The address was well received and together with the exhibit it seems fair to conclude that good work was done.

Lebanon.—September 4th. This visit was made upon the invitation of the Boone County Medical Society, in order to deliver a public address in the evening. Upon arrival I was met by a committee from the said medical association and spoke to a large audience in the Methodist Church. The subject was "The Care of the Public Health and the Work of the State Board of Health."

Anderson.—September 7th. This visit was made upon invitation of the school authorities of Madison County to address the Annual Teachers' Institute. The subject of the address was the "Public Health and the Work of the State Board of Health." The address was well received and a vote of thanks passed.

Thorntown.—September 11th. I visited Thorntown on this date in order to attend the dedication of the new schoolhouse. The State Board of Health condemned the schoolhouse at Thorntown two years ago, and extended the date of condemnation because it was shown that sufficient funds could not be raised to properly remodel the old schoolhouse. Much criticism was made against the Board when the condemnation was made but it seems that this opposition has been entirely removed, otherwise the executive officer of the State Board would not have been invited to be present at

the time of the dedication of the remodeled building. My address was well received and a vote of thanks passed.

The vital statistics for the quarter as usually given in this report are set forth in the following tables.

The following tables show the status for smallpox and typhoid fever for the third quarter, 1911:

SMALLPOX.

	Cases.	Deaths.	Homes Invaded.
July, 1910.....	25	0	4
July, 1911.....	44	0	11
August, 1910.....	6	0	3
August, 1911.....	31	0	11
September, 1910.....	1	0	1
September, 1911.....			
Total, 1910.....	32	0	8
Total, 1911.....			

TYPHOID FEVER.

	Cases.	Deaths.	Homes Invaded.
July, 1910.....	47	45	47
July, 1911.....	298	72	59
August, 1910.....	446	123	74
August, 1911.....	524	.....	83
September, 1910.....	800	158	83
September, 1911.....			
Total, 1910.....	1,293	326	204
Total, 1911.....			

Ordered: The Secretary is given permission to prepare and publish in the name of the State Board of Health a bound pamphlet on "The Prevention and Cure of Tuberculosis," the same to be distributed free to all schools and public libraries in Indiana.

Ordered: The letter of H. P. Greiner, trustee of Pierson Township, Vigo County, asking extension of condemnation of schoolhouse No. 1, Pierson Township, be extended, shall lie on the table.

Ordered: The condemnation of the Trafalgar schoolhouse be extended to June 1, 1912. This was done because of petition of ten patrons and because necessary legal processes and injunction had prevented the completion of the new structure which the authorities are willing and anxious to build.

POLLUTION OF MUSCATATUCK CREEK IN RIPLEY COUNTY BY CITY OF
NORTH VERNON.

State of Indiana. Before the State Board of Health.

The Town of Vernon

vs.

The City of North Vernon.

The plaintiff, by its common council, complains of the defendant and says:

That the plaintiff from the day of —, 1895, has and still maintains a system of public water works, to supply water to its inhabitants for domestic use and for other purposes, and secures said water from the north fork of the Muscatatuck River or creek. That said defendant permits to be discharged from its sewer into said Muscatatuck stream, wastes, befouling and deleterious matter, thereby materially injuring, for domestic use, the character of the water into which the same is discharged, to the injury of public health and comfort and is polluting the source of the plaintiff's water supply.

That said Muscatatuck stream is a natural water course running along and across and within plaintiff's incorporation line for a distance of about three miles, and that plaintiff has use of said stream for supplying its water works system and for other purposes.

Plaintiff says that said defendant corporation owns and operates, and for about seven years last past owned and operated, a sewage system that leads and empties its wastes into said Muscatatuck stream about two miles above the source of supply of the said plaintiff's or Vernon water works system. That said plaintiff has secured its water from said source for several years prior to the time when said defendant first operated its said mentioned sewage system and permitted it to flow into said stream above the source of plaintiff's said water supply.

Plaintiff further avers that said defendant unlawfully and injuriously has caused, suffered and permitted, and still continues to cause, suffer and permit, the offal, filth and noisome substances of said sewage to be collected and mingled with the water of said stream Muscatatuck, to flow into and to be deposited in and about and to be and remain in said stream; and cause the same to flow in said stream, thereby forming a noxious, noisome and offensive deposit near to and about the entrance of said sewage discharges into said stream, and downward therefrom along the course of said stream for a distance of about five miles and more, whereby that by reason of which the water of said stream becomes and is polluted and rendered noxious, and impure; poisonous, offensive; at times discolored and stinking, and unwholesome and unhealthy to the plaintiff, its inhabitants and its citizens. That by reason of said pollution the said water is rendered unfit for use by this plaintiff, its inhabitants and citizens, and to their great injury and to the great injury and damage and depreciation in valuation of the real and personal property within said plaintiff's corporation; that said noxious, noisome and offensive deposits are impure, noxious, along said plaintiff's corporation line, and into the source of plaintiff's said water supply; that such deposits are the

same impure, offensive, stinking, said stream and bed and banks thereof, as aforesaid, to the great injury and damage and depreciation in value of property abutting said stream, and rendering the water in said stream on and within said plaintiff's incorporation line, unfit for use for man and beast.

That said water in said stream or when same is sprinkled upon the streets of said plaintiff corporation or elsewhere, renders the atmosphere in the immediate vicinity impure, noxious, offensive, poisonous, unhealthy and unwholesome, thereby affecting the health of the citizens and inhabitants of said plaintiff town of Vernon.

Wherefore plaintiff by its common council sues and asks that said defendant corporation be perpetually enjoined from doing and performing the acts herein set out, and for all other proper relief, and that said injurious conditions be abated.

JOHN R. CANEY, City Attorney.

WM. F. WELKER, Mayor.

D. N. HAYDON,

JOHN CURTIS,

HENRY W. HENEGSTLEY,

Members of the Common Council of the Town of Vernon.

Additional:

C. C. JORDAN,

Secretary Board of Health of Town of Vernon.

Ordered: The Secretary shall acknowledge receipt of the Vernon petition and have made an inspection of the conditions complained of at as early date as possible.

REPORT TO THE STATE BOARD OF HEALTH.

An Investigation Into the Sanitary Condition of White River with Reference to the Influence of the Sewage of the City of Indianapolis on the Purity of the Water.

Pursuant to an order from the State Board of Health requiring a sanitary survey to be made of White River between the cities of Indianapolis and Martinsville, for the purpose of complying with certain provisions of Section 1 of the so-called Stream Pollution Law. Dr. W. F. King, Assistant Secretary of the State Board of Health, and H. E. Barnard, Chemist to the State Board of Health, on the 13th and 14th of September, 1911, made the survey.

The results of the survey as determined by observations taken at different points on the river are set out as follows:

1. *White River at Broad Ripple.*—At this point the river is nearly free from floating organic matter. The water is but slightly turbid and possessed no odor save the slight musty odor common to flowing streams. The river bottom is free from undecomposed sewage debris and no evidence of decomposition and the evolution of gas was noted.

2. *Bridge at West Washington Street.*—At this point the river is more turbid than at Point 1 and some evidence of putrefaction was ob-

served in pools on the river's edge. The odor of the water is not noticeable.

3. *Morris Street Bridge.*—At this point the river is turbid and the evolution of gas in pools and eddies indicates the presence of decomposing material. Much organic matter was observed floating on the surface of the water. This was, in part, grease and animal refuse from the abattoir of Kingan & Co., Ltd., vegetable refuse, tomatoes, etc., from the canning factory of the VanCamp Packing Company. The water has a foul odor characteristically that of waste waters from packing houses.

4. *One-fourth mile below Indianapolis Abattoir.*—At this point the river has a strong current, but in spite of the rapid flow of water the bottom is covered with a thick, black putrefying sediment, varying in depth from one inch to one foot. When detached from the bottom this sediment floats on the surface of the water in masses of varying size. The west bank of the river is lined with canning factory refuse, chiefly decomposing tomatoes. The odor of the water is foul and characteristic of packing house refuse.

5. *Outfall of City Sewer.*—At this point the main sewer of the city of Indianapolis enters the river. The sewage flows in part into an open flume which extends some two hundred feet along the river bank and in part directly into the river. The sewage is a concentrated domestic sewage carrying fecal matter, waste of infinite variety, vegetable debris, rags, paper, wood, etc. It possesses a typical sewage odor and is apparently entirely undecomposed. The shores are covered with a thick bed of sewage sludge. The river banks are black mould covered with caked sewage deposited during high water.

6. *Belt R. R. Bridge.*—At this point, one-fourth mile below the main sewer outfall, the river is full of ripples below which the water lies in stagnant pools. A small sewer outfall lies a few hundred feet above the bridge. The water in the pools, carrying a heavy burden of raw sewage, is in constant movement, due to the ebullition of foul gases produced by the decomposition of precipitated sewage. Every flow of gas is followed by the eructation of masses of black mud. The odor at this point is foetid and nauseating. The river flow is apparently a concentrated sewage.

7. *Raymond Street Bridge.*—At this point the river current is sluggish and the surface of the water is covered with detached masses of putrefying sewage. The odor is that of raw sewage. The shores are covered with vegetable debris, chiefly decomposing tomatoes.

8. *Creek Crossing Raymond Street at Point Below the Stockyards.*—This creek is the outlet of the stockyards and abattoir and is inconceivably foul. The flow of water at Raymond Street is almost stopped by the masses of sewage, dried blood, decomposing animal refuse, etc., which fill the bed of the stream.

9. *Harding Street Bridge.*—This point the river flows rapidly. The surface of the water is greasy and covered with bubbles formed by gases arising from the putrefying masses of sewage in the bottom of the river. Undecomposed fecal matter was observed in the current. The shores were lined with vegetable debris, chiefly decomposing tomatoes. The odor is very strong.

10. *River at Sellers Farm.*—At this point the city garbage is disposed of by reduction in large iron tanks. The grease is utilized as soap stock and the extracted refuse ground for fertilizer. The waste waters from the reduction plant flow directly to the river. All the night soil and refuse taken from the thousands of vaults in all parts of the city of Indianapolis is hauled to this point and deposited in enormous piles along the river bank. Several acres are covered to a depth of many feet by the night soil, which has been dumped thereon since the land was acquired by the city. A levee formed entirely of night soil extends along the edge of the bank some twenty feet above the river. In low ground an area of some one-fourth acre is impounded by a wall of night soil. Into this pool all the barrels hauled out by the vault cleaners is being dumped. The solid matter is slowly filling the pool; the liquid portion filters into the river. During periods of heavy rains there is absolutely nothing to prevent the washings from this entire area flowing directly into the river, and carrying with it great quantities of unoxidized fecal matter. The disposal of night soil and refuse from vaults as now attempted at this point, constitutes a very serious menace to the purity of White River, and the pollution of the river due to this agency is second only to that resulting from the inflow of the raw sewage.

The new Harding Street sewer empties into the river just above the levee here described. The river here has the characteristics of a stream of sewage. The odor is very foul and strong. Masses of fecal matter and partially decomposed sewage cover the surface of the river. The water is in a constant state of ebullition. Organic vegetable matter, chiefly decomposing tomatoes, line the bank. Two samples of water were collected at this point, one from the Harding Street sewer, and the other from the river below the sewer at the side of the night soil bank. The results of the analysis of these samples accompanies this report.

11. *Covered Bridge known as White River Bridge, five and one-half miles below the City Limits.*—At this point the river is 250 feet wide, flowing with a strong current. The water is dark and turbid, full of putrescible matter, constantly bubbling and apparently a concentrated sewage. The odor is as strong as at the sewer outfalls. The river is wide, tree lined and very attractive, but for the odor would be a beautiful stream. Sample 3 was taken at this point.

One mile to the west of the river, on the highway, the odor was very noticeable and disagreeable. At West Newton road the farmers complained bitterly of the odor of the river, which flows three-fourths of a mile away. At Landersdale, nine miles below the city limits of Indianapolis, and just over the line in Morgan County, residents say the odor of the river is very noticeable one and one-half miles away. Others complain of odor, too, three, four and four and one-half miles from the river. W. H. Reese, a resident of Madison Township, Morgan County, complains that the odor is so pronounced that he is compelled to close the windows and doors of his house, and that sometimes in the morning the odor is so nauseating that his family with difficulty eat breakfast.

12. *New Waverly Bridge, eighteen miles by road below Indianapolis, thirty miles or more by river.*—At this point the river is 250 feet wide with a swift current. The water is turbid, full of black, organic debris

with a very foul odor and the appearance of dilute sewage. The bottom of the river is covered with black, decomposing matter of the same character as that observed at the outfall of the main sewer at Indianapolis. The residents say that no fish are found in the river except at times of flood in the spring. The banks are lined with trees and aside from the appearance of the water and the foul odor the stream is very beautiful. A mile from the river the odor is so strong that residents are compelled to close windows on summer evenings. When the wind is in that quarter, residents at Five Points, four miles from the river, complain of the odor. Carpenters working on the bridge stated that the river on the day of the survey was at least 50 per cent. cleaner than usual. The river is six inches higher than normal.

13. *River at Bungalow, four miles north of Martinsville.*—At this point the river is 200 feet wide, deep and with sluggish current. The surface of the water is fairly clean but occasionally black masses are observed. One of us has frequently noted during the present summer that the river here is in much more worse condition than at present. The water is turbid and has a slight, though decided, odor of sewage. Gas was noted rising from eddies at the side of the river.

14. *River at Bridge below Martinsville.*—At this point the river is 200 feet wide, deep and flowing in a strong current. The surface is free from sewage but covered with bubbles which, however, are apparently not due to gas, but rather to agitation. No sewage or organic debris save that common to flowing streams, was observed on the bottom of the river. The odor was slightly stronger than of normal river water but was not objectionable.

At this point the river, at the stage prevailing on the day of the survey, was suitable for pleasure boating, and camping parties could utilize the banks without discomfort.

SUMMARY.—White River, a stream which, above Indianapolis, has the characteristics of the flowing waters of Indiana, receives the industrial waste and domestic sewage of that city and becomes thereby an open sewer, flowing liquid possessing all the attributes of sewage. The condition of the water improved but slightly during the first twenty miles of flow, and as far south as Waverly it is still very objectionable to sight and smell. At a time when, because of heavy rains, the river was higher than the normal stage, four miles north of Martinsville it still showed evidence of the sewage poured into it at Indianapolis.

White River, below Indianapolis, is a foul smelling, putrid stream, unstocked with fish, unfit for use by pleasure boats, and with its banks, otherwise admirably adapted for summer-houses, unoccupied by cottages and camps. Land values on either side of the river are depreciated by the odor of decomposing sewage, and residents are compelled to endure a nuisance which should be abated by those responsible for it.

Respectfully submitted,

H. E. BARNARD,
Chemist State Board of Health.

W. F. KING,
Assistant Secretary.

After consideration of said report and after having explanations of Dr. King and Mr. Barnard it was

Ordered: The Secretary shall present the reports of the pollution of White River by the city of Indianapolis, to the Attorney-General and requests his advice as to how the Board shall proceed under the statutes for the abatement of the nuisance.

HOBACK SCHOOL PETITION.

To the Indiana State Board of Health, Indianapolis, Ind.:

GENTLEMEN—We, the undersigned citizens of School District No. 9, and patrons of the school therein which is commonly known as "the Hoback Schoolhouse," which house is situate on the southeast corner of the northeast quarter of the northeast quarter of section 26, township 22 north, range 3 east, or two and three-fourths miles north and one-fourth mile east of Goldsmith, Tipton County, Indiana, respectfully report that said school building is now in a very dilapidated, unsafe and unsanitary condition, by reason of which it is unfit for school purposes.

Wherefore, we pray that you inspect the same and if the conditions warrant, that you condemn the same and prevent its further use for school purposes.

Respectfully submitted,

R. G. GIBBENS.
T. N. SMITH.
OBK. CAMPBELL.
M. S. SMITH.
I. D. COLTER.
D. W. HILLIGOSS.
E. E. BARR.

J. W. NEWLON.
M. E. BARR.
WM. M. ORR.
D. P. HOBACK.
E. W. ALLEN.
G. M. JONES.

Sanitary survey of "Hoback School," by Dr. W. F. Dunham, County Health Commissioner, September 13, 1911.

Site.—Size of school lot, 112 feet 6 inches by 162 feet 6 inches. Reasonably well situated, but a little low.

Building.—Brick. Size, 28 feet 6 inches by 34 feet 6 inches; height, 13 feet 8 inches to eaves; height to comb, 22 feet 8 inches. At each corner of building there are several brick out, walls cracked above windows, also cracked and are dangerous; walls so weak that striking with pole shakes the windows considerably.

Windows.—Three on each side of building (north and south side); small glass, one-third or more of glass missing; panes rotten and some missing; size of windows, 7 feet high by 2 feet 6 inches wide. Part of windows have shingles in for glass.

Door.—Wood. No glass; situated in east end of building. Size, 7 feet 3 inches. In poor condition.

Roof.—Shingle. Old. Roof don't look to be in good condition. Brick chimney, poor.

Interior of Building.—Walls plastered; ceiling plaster has fallen off in places and has been replaced with plaster and one place coated with cloth; part of ceiling fell off while I was there making inspection.

Floor.—Wood. Floor has been laid over another old floor and was damp and musty; not smooth, but with raised places in it.

Blackboard.—Slate, situated in west end of building. It is in fair condition. Forty-one pupils' seats, reasonably good. Good coal stove, located near center of room; no jacket around same. Dinner pails, cloaks, etc., placed in east end near the door. No halls. No basement.

Sanitary.—One frame outhouse, wrecked, located in northwest corner of lot back of schoolhouse, frame, but turned over; no vault at all at either of them, just level ground.

Water Supply.—Driven well. Good. No walks to well.

Fencing.—Rail fence on south side and on west side; no fence along front, which is to the east and next to the road.

School Building.—Is in bad condition almost every way, and these people (patrons) I think are justified in their action about this schoolhouse. It simply is a weak brick building, insanitary, a disease breeder, and is not fit for school purposes.

After consideration, the following proclamation was adopted, and the Secretary ordered to serve the same according to law:

PROCLAMATION OF CONDEMNATION.

Whereas, It has been shown to the satisfaction of the State Board of Health that the schoolhouse, known as the "Hoback School," in Prairie Township, in Tipton County, Ind., is unsanitary, threatens the health and life of the pupils, interfering with their efficiency, therefore the Indiana State Board of Health, according to the statutes,

Orders: That said schoolhouse, known as "Hoback School," in Prairie Township, Tipton County, Ind., is condemned, and shall not be used for school purposes after September 14, 1911, and if any school trustee or trustees, any teacher or any person, uses said schoolhouse for school purposes or teaches therein after the date above mentioned, he or she or they shall be prosecuted as provided in the law.

Any person mutilating or tearing down this proclamation shall be prosecuted.

Passed by the State Board of Health, September 14, 1911.

REPORTS OF EXHIBIT AND PLACES VISITED.

July 3. The Board's Exhibit was taken to Greensburg and placed in the main auditorium at the Greensburg Chautauqua. Captain J. L. Anderson accompanied me to Greensburg and assisted in putting the exhibit in place. The exhibit was left at the Chautauqua until Friday, July 7th, when I again visited Greensburg in company with Dr. J. P. Simonds, who was to make an address before the Chautauqua. On account of the rain, which inter-

ferred with the Chautauqua program, Dr. Simonds was not given an opportunity to give his address, but the exhibit was packed and returned to the office at Indianapolis.

July 13. On Thursday I accompanied Governor Marshall to Plainfield, where a sanitary inspection was made at the request of Superintendent Hanna, and in conference with the Governor a number of recommendations were proposed for consideration by the board of trustees, looking forward toward an improvement of sanitary conditions and an improvement in the physical condition of the boys at the school.

July 14. I visited Shelbyville in response to a petition and inspected the school building for colored children. A report of this inspection has been submitted to the Board for their action.

July 17. Monday I visited the schoolhouse at Emmerich's, just outside of Indianapolis, in Marion County, in company with Dr. Mackey, County Health Commissioner, and recommended to Dr. Mackey that this building should be condemned by him as being totally unfit for school purposes.

July 18. Tuesday, in response to a petition from a number of patrons, I made an inspection of the school building at Glendora, in Rush County, in company with Dr. F. H. Green, County Health Commissioner. It was recommended that this school building be condemned as being unsanitary and unfit for school purposes, and Dr. Green was instructed to serve notice upon the trustee of the township.

On the same day I accompanied Dr. Green to New Salem, in Rush County, where a number of smallpox cases had recently occurred. Owing to the fact that there had been some difference of opinion among physicians and others as to whether this disease was true smallpox, I inspected one of the cases and pronounced it a genuine case of smallpox. All told, 16 cases have occurred in this town and the community up to this date. As usual, a great many of the cases were so mild that no physician was in attendance and the infection has had a splendid opportunity of being widely distributed.

Dr. Green is taking prompt and efficient action to suppress the outbreak and is now having the support and co-operation of all the physicians in that community.

SIXTH ANNUAL REPORT
OF THE
DIVISION OF
BACTERIOLOGY AND PATHOLOGY OF
THE STATE LABORATORY
OF HYGIENE

FOR THE YEAR ENDING SEPTEMBER 30, 1911

LABORATORY STAFF.

J. P. SIMONDS, A. B., M. D.,
Superintendent.

WM. SHIMER, A. B., M. D.,
Assistant Superintendent.

ADA E. SCHWEITZER, M. D.,
Assistant Bacteriologist.

L. B. CLORE, B. S.,
Assistant Bacteriologist.

HERVEY M. HOOKER,
Clerk and Stenographer.

ROBERT P. JOHNSON,
Technical Assistant.

SIXTH ANNUAL REPORT OF THE DEPARTMENT OF BACTERIOLOGY OF THE LABORATORY OF HYGIENE.

BY J. P. SIMONDS.

INTRODUCTORY.

In many ways this has been the most successful year in the history of the Laboratory. The number of specimens examined exceeded by almost two thousand the largest number in any previous year, as shown in Table 1. This increase has been uniform in every department of our work, as shown by Table 2.

TABLE 1.

1906	2,239 specimens
1907	3,991 specimens
1908	8,087 specimens
1909	7,951 specimens
1910 (11 months)	8,786 specimens
1911	11,142 specimens

TABLE 2.

Summarizing Routine Diagnostic Examinations for Six Years.

YEAR.	Sputum.	Diph- theria.	Typhoid.	Malaria.	Patho- logical Tissues.	Rabies.	Gonor- rhea.	Miscel- laneous.	Total.	Average Per Day.
1906	1,503	171	499					66	2,239	8
1907	2,116	633	802	45				395	3,991	11
1908	3,136	2,779	1,270	167	165	82	178	310	8,087	22
1909	3,458	1,445	1,508	194	187	144	349	666	7,951	22
1910 (11 mos.)	3,583	1,638	1,404	189	303	134	430	1,099	8,786	26
1911	4,228	2,452	2,038	203	415	243	534	1,029	11,142	31
Total	18,024	9,118	7,521	798	1,076	603	1,491	3,565	42,196	.....

Several new departures have been introduced with the object of improving the service.

New Apparatus.—A new Rickard's Sputum Shaker, a new Centrifuge and a modern type of autoclav have been installed, much to the improvement of the work.

Journal Club.—At regular intervals the members of the laboratory staff meet and hear reports on scientific articles in current

medical literature. In this way every member of the staff can keep up with the advance being made and improved methods being introduced. In fact he can get the gist of all the journals received at the laboratory, a thing that would be impossible if compelled to read all the articles himself.

Library.—The department now has a good working library of nearly two hundred volumes, including ninety bound volumes of scientific journals, exclusive of government and State reports. The laboratory receives eleven journals, all of which bear directly on laboratory and public health work.

Exhibit.—Members of the laboratory staff very frequently have opportunity to address county and district medical societies on the work of the laboratory. An exhibit has been prepared, consisting of charts, showing the extent of the work, the meaning of results of examination, and the methods of preparing and sending specimens to the laboratory. One very instructive part of the exhibit is a series of "improperly prepared specimens, a lesson in things to be avoided," with explanations why they are improperly prepared.

An exhibit is also being prepared to be loaned on request to teachers of science in the public schools for use in demonstrating the subject of hygiene.

School Inspection.—A law passed by the last Legislature makes medical inspection of schools optional for several years, and then compulsory. Through the State Board of Education and the central office of the Board of Health, it was learned that the school boards of certain cities and towns were interested in this matter. It was thought that the laboratory might be of some service in helping to advance this work, and the following letter was sent to about 37 superintendents of city schools:

DEAR SIR—I have learned through the office of the Secretary of the State Board of Health that you are interested in medical inspection of school children. Every one who has a vital interest in this matter is anxious for medical inspection to be a success in Indiana from the very beginning. I am writing to call your attention to some ways in which the State laboratory can be of service to you in this matter.

With the opening of the schools every year there always occur localized epidemics of diphtheria. The fact that diphtheria is still a disease with which school authorities must reckon is due to the inadequate manner in which quarantine is conducted. There is only one scientific way to control quarantine in diphtheria, and that is by laboratory examinations of cultures from the throats of patients. Persons who are found infected should not only be excluded from school but

also kept in quarantine until the throat and nose are found free from infection by such examination. Perfectly healthy children who have been in contact with a diphtheria patient may carry virulent bacilli in their throats and be a source of danger to others without suffering the slightest inconvenience themselves.

The State laboratory will be glad to examine all the cultures your school physician may care to send us. I would suggest that some such plan as the following be adopted:

1. That a culture be taken from every case of sore throat in the school, regardless of the presence or absence of a membrane.

2. That every child in whose throat diphtheria bacilli has been found be excluded from school until at least one subsequent culture has been found to contain no diphtheria bacilli.

3. That cultures be taken from the throat of every school child in the same family with a diphtheria patient.

4. That when more than three cases of diphtheria occur in one schoolroom within ten days, cultures be taken from the throat of the teacher and of every pupil in the room.

The laboratory furnishes, free of charge, outfits for taking cultures. A supply of these will be sent you or your school physician upon request.

Yours very truly,

J. P. SIMONDS,
Superintendent.

The response from the school authorities was gratifying, and at least one severe epidemic, namely, at Greensburg, has been studied in considerable detail.

Research.—On account of the rapidly increasing amount of routine work and the crowded quarters of the laboratory, satisfactory original investigation of public health problems has not been possible. However, several investigations have been undertaken. Only a preliminary report can be made at the present time.

Tuberculosis.—An attempt has been made to isolate tubercle bacilli from sputum and other tuberculous material received at the laboratory. In this work there were two distinct objects: First, to determine the disinfecting efficiency of the carbolic acid contained in our sputum outfits; and second, to determine the type of tubercle bacilli in various tuberculous infections. Five cultures of tubercle bacilli have been isolated. The method used was that recently described by Park and Krumwiede in their extensive investigations. A guinea pig was injected intraperitoneally with the material in question and was killed with chloroform in four to six weeks. Cultures were made from the organs showing tuberculosis on plain and glycerin egg media.

Four of the strains grew quite luxuriantly from the beginning

on glycerin egg. Two of these cultures were isolated from vertebro-spinal fluid from cases of tuberculosis meningitis in children, 8 months and $3\frac{1}{2}$ years of age, respectively. The other strains were isolated from sputum of adults. One of these specimens was received in one of our regular containers and, therefore, contained carbolic acid. The post mortem on this guinea pig showed generalized tuberculosis. That these tubercles were not due to the lodgment and disintegration of dead tubercle bacilli was shown by the abundant growth of the organisms isolated from these lesions.

Because of their luxuriant growth from the beginning on glycerin egg, it is probable that these four strains belong to the human type of tubercle bacilli. The fact that we were able to cultivate tubercle bacilli from the organs of the guinea-pig, injected with sputum containing carbolic acid, would indicate that the use of a five per cent. solution of phenol in sputum outfits is not so great a protection as has been supposed. It is possible that the presence of living tubercle bacilli in this specimen may have been due to the gradual evaporation of the carbolic solution. The sputum had a distinct carbolic odor, however.

The fifth strain of tubercle bacilli isolated was from pus from a tuberculous bone lesion in a child 20 months old. This refused to grow on media containing glycerin and grew rather scantily on ordinary egg media. Hence, it is probable that this strain of tubercle bacilli was of the bovine type.

Altogether 43 specimens of tuberculous material, including sputum, were examined. Nine guinea pigs were found at autopsy to be suffering from tuberculosis. Four of these had been dead for some time when discovered and it was impossible to isolate tubercle bacilli on account of the growth of colon bacilli and other bacteria into the tissues from the alimentary tract.

Diphtheria.—Investigations are being carried out to determine the effect of inoculating media with throat swabs in the dry condition in which they are received and with the same swabs after being moistened in sterile water. This was suggested by reports from the Minnesota State Laboratory to the effect that they frequently had cultures fail to grow when made with swabs which had become dry. In our experience, the dry-swab cultures very rarely fail to grow. The only difference between the results with the moist and dry cultures which we have noted is the slightly more rapid growth and the very slightly higher percentage of positive results from the moist swab cultures.

Antityphoid Vaccination.—Arrangements have been made to supply antityphoid vaccine to physicians free of charge on the condition that they send us careful records of each case. The vaccine, which is made according to the method used in the United States Army, is sent out in hermetically sealed ampules. The following statement is sent for the guidance of the physician:

FACTS ABOUT ANTITYPHOID VACCINATION.

1. The material injected is a *vaccine* and not a *serum*. It has no curative effect. It is *not* to be given to a patient who is actually suffering from typhoid fever in any stage of the disease. The object of the injection is to stimulate the body to the production of antibodies which will protect the patient against possible infections in the future.

2. The vaccine is prepared by suspending a 24-hour agar slant growth of typhoid bacilli in 20 cc. of sterile salt solution and heating for two hours at 60 degrees C. One cc. of this heated suspension contains approximately 500,000,000 dead bacilli and forms one dose.

3. The reaction following the injection varies in different individuals. The results of several thousand injections in the United States army were as follows:

REACTION.

	<i>Absent.</i>	<i>Mild.</i>	<i>Moderate.</i>	<i>Severe.</i>
First dose	62.7 %	32.0 %	4.5 %	0.7 %
Second dose	68.6 %	25.8 %	5.0 %	0.6 %
Third dose	79.0 %	16.7 %	4.1 %	0.2 %

A mild reaction resembles the onset of a cold, from which the patient quickly recovers. A severe reaction may be accompanied by fever, chills, herpes, nausea, vomiting and diarrhea. This need cause no alarm, for the symptoms begin to subside in a few hours and, as a rule, have entirely disappeared in two days. At the site of injection there may be tenderness and redness which is rarely troublesome and disappears in 48 to 72 hours.

4. The results of antityphoid vaccination in protecting against typhoid fever have been very gratifying. In the English army the total number of cases of typhoid fever among vaccinated soldiers was less than the number of deaths among a like number of unvaccinated men placed under similar conditions. The occurrence of only one case of typhoid among 12,000 vaccinated soldiers stationed in Texas in 1911 contrasts favorably with the record of the United States army in the Spanish-American War, when one-fifth of all the men suffered from the disease and 1,580 of them died. Certain persons engaged in civil occupations, such as nurses, physicians, laboratory workers and traveling men, are especially liable to contract typhoid fever and need the protection afforded by antityphoid vaccination. The immunity produced by the injections is known to last at least three years. When a person previously vaccinated does take typhoid fever the attack is invariably very mild.

Specific directions for injecting the vaccine are sent with each dose. Certain information concerning the local and general reaction after each injection are required before the succeeding doses are sent. The object of supplying this vaccine free is not so much for the protection of the individual as of the public. If any large number of persons are vaccinated against typhoid, fewer people will be found susceptible. With fewer cases of the disease, fewer typhoid bacilli will be excreted for the infection of the public. It is in this way that antityphoid vaccination will aid in protecting the public against this disease.

From July to November, 1911, fifty persons received antityphoid vaccine. Most of the persons thus injected were hospital nurses, a few were internes, the rest were doctors and members of the Indiana National Guard.

None of the nurses had to be relieved from duty on account of the severity of the reaction. In only one case did the temperature go to 102° F. In only a few cases did the temperature rise more than a degree. In other cases the temperature fell a degree below normal. In all cases the temperature had returned to normal in 36 hours. Almost immediately following the injection there was smarting and burning at the site of injection. Within from three to four hours following the injection there was slight edema, swelling, redness and tenderness from two to four inches in diameter about the point of injection. In some cases there was soreness and tenderness in the axillary glands. The severest symptoms had subsided in 36 hours.

Venereal Diseases.—Early this year blank cards were sent to a number of physicians in the smaller towns of the State asking them to give us certain information regarding their cases of venereal diseases. Herewith is presented a specimen of the card sent out:

Dr.....	Address.....
Patient's age.....Sex.....	{ Married.....
	{ Single.....
Patient's occupation	
Duration of present attack.....	
Source of present infection.....	
Clinical diagnosis	
Previous infections, how many and when.....	

The response was not as gratifying as had been wished, but we greatly appreciate the enthusiastic efforts of many of the doctors to whom cards were sent. Reports on a little more than one hundred cases were received. While an analysis of this small number

will not be at all conclusive, it may be suggestive and is presented here for what it is worth. See Tables 3 and 4.

TABLE 3.

Showing the Social Status of 122 Patients with Venereal Disease.

SOCIAL STATUS.	MALES.		FEMALES.	
	Gonorrhea.	Syphilis.	Gonorrhea.	Syphilis.
Married.....	31	8	5	5
Widow or widower, including divorced.....	1	0	3	1
Unmarried.....	42	16*	7	2*
Prostitute.....			1	0
Totals.....	74	24	16	8

*One of these was a chancre on the lip.

TABLE 4.

Showing Source of Infection in the Cases of 98 Males with Venereal Disease.

DISEASE.	SOURCE OF INFECTION IN 40 MARRIED MEN.			SOURCE OF INFECTION IN 61 SINGLE MEN.		
	Private Prostitute.	Public Prostitute.	Unknown.	Private Prostitute.	Public Prostitute.	Unknown.
Gonorrhea.....	17*	11	4	17	24	1
Syphilis.....	5	3	0	3	10	3†
Totals.....	22	14	4	20	34	4

*Four men claimed to have got their infection from their wives.

†One was a chancre on the lip, probably from a common drinking cup. A clerk in same office had mucous patches in his mouth.

These tables indicate that the private, clandestine or occasional prostitute is an exceedingly important and often neglected factor in the spread of venereal diseases in the small towns and rural districts. In Table 4, 42 cases were traceable to private, and 48 to public prostitutes. Even excluding the four cases in which the wife was declared to be the source of infection, these figures suggest that the majority of venereal infections in married men are obtained from clandestine prostitutes, while the majority of infections in single men are obtained in public houses of prostitution.

The chief importance of this analysis lies in the emphasis laid upon the private or clandestine prostitute as a source of danger to the public.

Needs of the Laboratory.—The most urgent need of the laboratory is more room. Every inch of available space in our present quarters is now being utilized. Apparatus, reagents, specimens, etc., are literally piled up in such a way that much time is wasted

in getting at things that are needed. In such a crowded condition it is impossible to practice the art of neatness and order so essential to successful laboratory work. If the laboratory is to continue to grow in usefulness and service, more room is absolutely essential. There is no hope of getting more room on any of the already overcrowded floors of the State House. The basement, while it might furnish more floor space for expansion, is a very poor place for a bacteriologic laboratory, where good light is essential to successful microscopic work. It is to be hoped that the next Legislature will permit us to rent quarters outside the State House.

Up to the present time the appropriation for this laboratory has been ample to meet all its needs. But at the present rate of increase of work this amount will be wholly inadequate within another year. During the past year the average cost of examination per specimen has been ninety cents (\$0.90).

TUBERCULOSIS.

1. SPUTUM.

During the year 4,228 specimens of sputum were examined for tubercle bacilli. Of these 1,213, or 29 per cent., were positive. The number of specimens of sputum received each month is shown in Table 5.

TABLE 5.
Showing Number Specimens Sputum Examined Each Month.

MONTH.	Positive.	Negative.	Total.
October, 1910.....	66	189	255
November, 1910.....	71	203	274
December, 1910.....	77	211	288
January, 1911.....	82	230	312
February, 1911.....	73	280	353
March, 1911.....	87	296	383
April, 1911.....	101	336	437
May, 1911.....	121	314	435
June, 1911.....	122	246	368
July, 1911.....	124	230	354
August, 1911.....	155	236	391
September, 1911.....	134	244	378
Totals.....	1,213	3,015	4,228

It is impossible to make any just comparison of the number of positive sputa found during the different quarters because of the introduction during the summer of the antiformin method of examining sputum.

The number of specimens received from each county is shown in Table 6.

TABLE 6.

Showing the Number of Specimens of Sputum from Each County.

	Pos.	Neg.	Total.		Pos.	Neg.	Total.
Adams	7	32	39	Lawrence	13	41	54
Allen	2	25	27	Madison	49	118	167
Bartholomew ...	14	11	25	Marion	156	433	589
Benton	12	26	38	Marshall	11	36	47
Blackford	13	35	48	Martin	11	24	35
Boone	20	26	46	Miami	13	37	50
Brown .....	..	..	..	Monroe	1	1	2
Carroll	6	21	27	Montgomery ...	25	52	77
Cass	12	22	34	Morgan	11	22	33
Clark	6	11	17	Newton	1	3	4
Clay	21	50	71	Noble	6	24	30
Clinton	20	20	40	Ohio	1	1	2
Crawford	1	10	11	Orange	2	..	2
Davless	13	21	34	Owen	4	11	15
Dearborn	4	26	30	Parke	5	13	18
Decatur	10	22	32	Perry	1	5	6
Dekalb	15	37	52	Pike	10	10	20
Delaware	21	87	108	Porter	1	4	5
Dubois	3	9	12	Posey	5	7	12
Elkhart	27	97	124	Pulaski	11	14	25
Fayette	12	15	27	Putnam	5	19	24
Floyd	25	25	50	Randolph	12	31	43
Fountain	15	21	36	Ripley	5	18	23
Franklin	8	10	18	Rush	11	28	39
Fulton	12	31	43	Scott	3	9	12
Gibson	10	20	30	Shelby	10	13	23
Grant	23	53	76	Spencer	8	21	29
Greene	15	76	91	Starke	2	2	4
Hamilton	26	56	82	Steuben	1	4	5
Hancock	12	33	45	St. Joseph.....	32	89	121
Harrison	11	17	28	Sullivan	11	29	40
Hendricks	21	41	62	Switzerland	5	8	13
Henry	12	48	60	Tippecanoe	17	34	51
Howard	11	31	42	Tipton	9	26	35
Huntington	21	40	61	Union	2	8	10
Jackson	12	25	37	Vanderburgh ...	51	94	145
Jasper	7	7	14	Vermillion	13	32	45
Jay	10	17	27	Vigo	53	109	162
Jefferson	15	23	38	Wabash	12	51	63
Jennings	6	9	15	Warren	4	10	14
Johnson	8	18	26	Warrick	4	6	10
Knox	10	44	54	Washington	4	6	10
Kosciusko	6	26	32	Wayne	33	79	112
Lagrange	3	30	33	Wells	3	8	11
Lake	18	35	53	White	4	32	36
Laporte	1	24	25	Whitley	5	30	35
Totals	557	1,363	1,920	Totals	656	1,652	2,308

Of the counties from which 50 or more specimens were received, those showing the highest percentage of positives were Clay County, 50 per cent.; Vanderburgh, 35 per cent.; Tippecanoe, 34 per cent. The average per cent. of positives from the entire State was 28.8.

An analysis of 991 positive cases in which the ages of the patients were given is shown in Table 7.

TABLE No. 7.

Showing the Age and Sex in 991 Positive Cases.

Age.	Males.	Females.	Totals.
Up to 10 years	3	5	8
11 to 20 years	50	100	150
21 to 30 years	168	227	395
31 to 40 years	105	116	221
41 to 50 years	58	55	113
51 to 60 years	33	22	55
61 years and upwards	28	21	49
Total.....	445	546	991

These figures suggest that up to forty years tuberculosis is much more frequent in women, but that after that age it is slightly more common in men. This is also shown in Table 8, which includes the figures for 1910, and is therefore based on nearly two thousand cases. Thus 11.5 per cent. of the tuberculous male patients and 18.4 per cent. of the female patients were under 20 years of age; while 26.8 per cent. of the men and only 19.7 per cent. of the women were over 40 years old. The per cent. of patients between the ages of 21 and 40 years of age was practically identical for both sexes.

TABLE 8.

Showing Relative Incidence of Tuberculosis in Various Periods of Life According to Sex.

AGE.	MALES.		FEMALES.		Total Cases.	Per Cent.
	Totals.	Per Cent.	Totals.	Per Cent.		
Up to 20 years	103	11.5	198	18.4	301	15.2
21 to 40 years	553	61.7	666	61.9	1,219	61.3
41 years and up.	240	26.8	212	19.7	452	23.5
Totals.....	896	100.0	1,076	100.0	1,972	100.0

The estimated duration of the disease at the time of the discovery of tubercle bacilli is shown in Table 9, which is based on 950 positive examinations.

TABLE 9.

Showing Estimated Duration when Tubercle Bacilli were Found in Sputum.

DURATION.	Males.	Females.	Totals.	Per Cent.
Up to 3 months.....	96	112	208	22.0
4 to 6 months.....	90	117	207	21.8
7 to 9 months.....	52	61	113	12.0
10 to 12 months.....	14	15	29	3.0
1 to 2 years.....	118	143	261	27.5
3 to 4 years.....	25	54	79	8.3
5 to 10 years.....	15	24	39	4.1
10 years and up.....	5	9	14	2.3
Totals.....	415	535	950	100.0

The relation of the disease to exposure to infection is shown in Table 10. The percentage of these cases during two years (viz., 59 per cent.), in which there was no known source of infection is considerably larger than for last year alone. This emphasizes the fact that tuberculosis is an infectious disease, that its spread is due to the dissemination of infectious material in public places, and that more persons contract tuberculosis on account of the carelessness of consumptive strangers than because of lack of care on the part of tuberculous relatives and immediate associates.

TABLE 10.

Showing the Relation of Exposure to the Development of Tuberculosis.

EXTENT OF EXPOSURE.	1910.	1911.	Totals.	Per Cent.
Tuberculosis in patient's family.....	422	418	840	36.0
Tuberculosis in patient's associates.....	65	71	136	5.0
No known source of infection.....	430	927	1,357	59.0
Totals.....	917	1,416	2,333	100.0

In Table 11 is shown the relation of patients to persons in the same family who previously had tuberculosis. This table is based on an analysis of cases reported during two years and emphasizes the statement made last year.

TABLE 11.

Showing Relation of Other Tuberculosis Members of the Family to the Patient.

Member of Family Having Tuberculosis.	Member of Family Contracting Tuberculosis.	1910.	1911.	Total.	Per Cent.
Father.....	Son.....	27	11	38	44
	Daughter.....	29	19	48	56
Mother.....	Son.....	35	16	51	33
	Daughter.....	68	37	105	67
Brother.....	Brother.....	50	23	73	57
	Sister.....	44	11	55	43
Sister.....	Brother.....	40	10	50	34
	Sister.....	72	26	98	66

The number of cases used in this analysis is too small to justify positive conclusions. But they furnish concrete examples of certain well-known facts concerning tuberculosis, and for that reason are given here. When the father has tuberculosis the chances of a daughter's taking the disease is only slightly greater than the son's (56 per cent. and 44 per cent., respectively); but when the mother is a consumptive the chances of the daughter's becoming tuberculous are twice as great as the son's (67 per cent. and 33 per cent., respectively). The reason for this is plain. The father's relations with his children are nothing like so intimate as the mother's, nor is the son so closely associated with his mother as the daughter. The closer association of the latter is, furthermore, usually indoors, where ventilation is often none too good and conditions are more favorable to the transference of infection. When a brother has tuberculosis the chances of another brother's taking the disease are slightly larger than a sister's (57 per cent. and 43 per cent., respectively). But when a sister is tuberculous the chances of another sister's becoming so are nearly double a brother's (66 per cent. and 34 per cent., respectively). This variation is likewise explained by differences in the intimacy of association.

In addition to the cases analyzed above, there was more than one tuberculous person in the families of 178 patients. Of these, 67 were males and 111 females. This emphasizes still more strongly the fact so evident in Table 12, viz., that on account of their more intimate association with relatives and their indoor life, women are more likely to contract tuberculosis from tuberculous relatives than men are.

Beginning with June, 1911, the "antiformin method" of examining sputum was introduced as a routine procedure. Antiformin is a trade name for a strongly alkaline solution of sodium hypochlorite. It contains from 5 to 7 per cent. of free chlorine, and has the power of dissolving pus cells, mucus and ordinary bacteria. On account of their waxy capsules, tubercle bacilli are not affected by it.

The technic of the new method is briefly as follows: Antiformin is added to the sputum in the proportion of about 1 part antiformin to 4 parts sputum. The mixture is then placed in a Rickards' sputum shaker and vigorously shaken for 5 to 10 minutes. The mixture is then poured into a tube of 50 cc. capacity and enough distilled water added to fill the tube. It is then centrifugalized for ten minutes at 3,000 revolutions per minute. The addition of the water reduces the specific gravity of the liquid to below 1,050. All the

tubercle bacilli in the entire mass of sputum, therefore, will be concentrated into a small mass of sediment at the bottom of the tube. The supernatant fluid is poured off and smears from the sediment made on a glass slide previously covered with albumin fixative. The smear is fixed by heat and stained by the usual Ziehl-Neelsen method.

In order to try out the antiformin method, we examined in this way all those specimens received between March 15th and April 16th from cases clinically diagnosed tuberculous, but found negative on ordinary bacteriologic examination. By "ordinary bacteriologic examination," is meant the making of a smear directly from the untreated sputum. The result of a comparison of the antiformin and ordinary methods is shown in Table 12.

TABLE 12.

Ordinary Examinations—

Total number specimens examined	339
Total number specimens positive	96
Per cent. positive	28.3

Antiformin Examinations—

Total number specimens examined	74
Total number specimens positive	8
Per cent. positive	10.8

Total number of sputum specimens received March 15 to April 16, 339—

Positive by ordinary examination	28.3 %
Positive by combined ordinary and antiformin examination..	30.65%
Increase by combined method.....	2.35%

The greater accuracy of the new over the old method is further shown by a comparison of the per cent. of positives obtained before and after the adoption of the new procedure. An average of 36 per cent. of all specimens of sputum examined by the antiformin method have been found to contain tubercle bacilli. The average number of positives last year was 29.2 per cent.; for this year, previous to the routine use of antiformin, was 25 per cent.

The chief value of this method lies in the increased value of the results of examining sputum from very early cases of tuberculosis. In the later stages of the disease it is usually quite easy to find tubercle bacilli in the sputum by almost any method of examination. In the very early stages, however, while there is yet hope for the recovery of the patient, it is frequently impossible to secure the absolute proof of the nature of the disease by finding the bacilli in the sputum. The method of concentration now used renders comparatively easy the finding of tubercle bacilli in specimens in which

they are far too few in number to be found by the ordinary method of examination. Heretofore physicians have sent specimens largely from well advanced cases merely for the confirmation of a diagnosis already sufficiently clear. It is to be hoped that in the future we will receive more and more specimens from early and merely suspected cases. The greater certainty of finding tubercle bacilli in such cases will render examination of much more value to the patient, and, by saving him from the later and more dangerous stages, to the public.

2. TUBERCULOUS MENINGITIS.

Few diseases which affect children are more distressing than tuberculous meningitis. It is distressing because of the uniformly fatal termination and because of the intense suffering the child undergoes. The vast majority of infections with tubercle bacilli in adults affect the lungs. In children, however, the place of least resistance to this deadly germ appears to be the bones, joints, lymph glands, and meninges (the covering of the brain and spinal cord). During the last two years six cases of tuberculous meningitis in children have come under our observation. Five of these cases illustrate the most important factor in the cause of this dreadful disease, namely, association with an older person who has tuberculosis. These cases are as follows:

Case 1. This was a bright little three-year-old girl, seen on February 7, 1910, with Dr. T. J. Shackelford, of Warsaw, Indiana. About six months before, her father's uncle came to live with them. He had tuberculosis in its later stages and had broken up his home expecting to spend the time with relatives until the inevitable end should come. He little thought that the specter of death would hover over every household in which he lived. Some time during the fall of 1909 he came to the home of this little girl. She and her great-uncle grew to be great chums. She was with him constantly and he was very fond of kissing her. After about a month, the uncle went away and died soon after in the home of another relative. About Christmas, 1909, the mother noticed that the child became tired more easily than usual. This gradually increased. She would get up in the morning for breakfast and then go back to bed and sleep for an hour or two. Later she disliked very much to be disturbed and would often lie quite still with her eyes closed as long as anyone was in the room. Then came severe headache and later convulsions. On the night of February 7, 1910, about 40 c.c. (about an ounce and a half) of cerebro-spinal fluid was withdrawn

and very many tubercle bacilli were found in it. The child died on the following day, the victim of ignorance.

Case 2. This patient was a 16-months-old baby boy in Indianapolis. On May 29, 1910, Dr. J. J. Gramling brought to the laboratory a specimen of cerebro-spinal fluid from this child. In it were found a great many tubercle bacilli. The baby had had measles about two months before and had not been well since. Two weeks before the specimen was taken it became more fretful and restless. On May 22d and 23d it had several convulsions. The symptoms gradually grew worse. The withdrawal of the fluid gave a slight temporary relief, but the child died a few days later. The child's grandmother was in an advanced stage of tuberculosis, and she had petted and "loved" the child a great deal.

Case 3. On December 28th and again on December 30th, 1910, Dr. G. W. Lutz, of Indianapolis, brought to the laboratory a specimen of cerebro-spinal fluid from a three-and-a-half year old girl. Great numbers of tubercle bacilli were found in both specimens of fluid. The child died a few days later. Careful inquiry by Dr. Lutz failed to reveal any certain source of the infection. It was thought, however, that the mother had tuberculosis of the kidney.

Case 4. This was an eight-months' old baby girl who lived in a town a short distance from Indianapolis. A specimen of cerebro-spinal fluid was brought to the laboratory, February 2, 1911, by Dr. J. H. Taylor, of this city. We were unable to find tubercle bacilli with the microscope, but a guinea-pig injected with some of the fluid died in due time of generalized tuberculosis. On inquiry it was found that the child's grandmother had died a short time before of tuberculosis. She begged to have the child brought to her before her death. She fondled it and kissed it a great deal and doubtless left tubercle bacilli on its lips from her kisses. The child died a few days later, after the cerebro-spinal fluid was brought to the laboratory.

Case 5. This patient, a boy two years old, was also one seen by Dr. J. H. Taylor in consultation. No tubercle bacilli were found in a specimen of cerebro-spinal fluid brought to the laboratory on April 30, 1911. However, a guinea-pig injected with a part of this fluid died in due time of generalized tuberculosis. The child had died weeks before the guinea-pig showed us the true cause of his illness. On inquiry it was found that the mother had tuberculosis.

Case 6. A third specimen of cerebro-spinal fluid sent to the laboratory by Dr. Taylor was from a two-year-old baby boy in eastern Indiana. Microscopic examination proved negative, but a

guinea-pig injected with some of the cerebro-spinal fluid died of generalized tuberculosis. The child died a few days after the specimen was brought to the laboratory. There was no history of tuberculosis in any members of the child's family. The only discoverable source of infection was a young man in the last stages of tuberculosis with whom the child came in contact at the home of a relative. The young man was "very fond of the child and played and talked with him some."

These cases are only illustrative and do not by any means indicate the actual number of deaths from this dreadful disease. In 1910 there were 255 deaths in Indiana from tuberculous meningitis. Of these victims 164, or 64 per cent., were under five years of age. If there was the same ratio of definite history of exposure in these cases as in the five reported above, at least 137 got their infection because of the ignorance of parents or relatives in allowing them to be closely associated with or petted and kissed by adults who were suffering from tuberculosis.

In addition to the above cases in children, Dr. J. A. McDonald, of Indianapolis, sent to the laboratory a specimen of cerebro-spinal fluid from a man 27 years old in which many tubercle bacilli were found. The man began to be ill four weeks before the specimen was taken, with frontal headache, nausea and vomiting. These symptoms steadily increased in severity. During the later stages of the disease he was irrational. At the time the cerebro-spinal fluid was withdrawn his temperature was 101° F., pulse rate 135, and respiration 28. Patient died a few days later.

In examining cerebro-spinal fluid for tubercle bacilli an attempt is always made to spread on the slide the fine spider web clot which forms in the fluid soon after removal. This furnishes by far the best results of any method yet devised. Where the microscopic examination is negative a guinea-pig is injected if the fluid is not contaminated when it reaches the laboratory.

3. TUBERCULOSIS OF THE GENITO-URINARY TRACT.

Tubercle bacilli were found in ten samples of urine from nine patients. Guinea-pigs were injected with two specimens and tubercle bacilli of the human type isolated from the tuberculous organs of the pigs.

The method used for finding tubercle bacilli in urine is as follows: The entire sample is centrifuged. All the sediment is digested with antiformin and again centrifuged. Smears from this sediment are made, stained, decolorized with acid alcohol, followed by absolute

alcohol and examined as usual. Unless acid fast bacilli are present in considerable numbers and in clumps, a positive diagnosis of tuberculosis is not made.

DIPHTHERIA.

During the past year 2,452 throat cultures were examined for diphtheria bacilli, of which 791, or 32 per cent., were positive. The number of positives and negatives among cultures marked "For Diagnosis" and "For Release from Quarantine" is shown in Table 13.

TABLE 13.
Showing Cultures Classified.

	Positive.	Negative.	Total.	Per ' cent Positive.
Primary.....	401	780	1,181	39.9
Secondary.....	225	283	508	44.3
Total.....	626	1,063	1,689	37.1

Undoubtedly it was not stated on every culture whether it was for diagnosis or release. The table does not include cultures for wholesale inspection.

The number of cultures received each month is shown in Table 14.

TABLE 14.
Showing the Number of Throat Cultures Received Each Month.

MONTH.	Positive.	Negative.	Total.
October, 1910.....	175	477	652
November, 1910.....	120	198	318
December, 1910.....	91	145	236
January, 1911.....	57	152	209
February, 1911.....	33	97	130
March, 1911.....	36	87	123
April, 1911.....	32	55	87
May, 1911.....	25	52	77
June, 1911.....	13	45	58
July, 1911.....	24	56	80
August, 1911.....	57	176	233
September, 1911.....	128	121	249
Totals.....	791	*1,661	2,452

*Including 13 unsatisfactory cultures.

The number of throat cultures received from each county is shown in Table 15.

TABLE 15.

Showing the Number of Specimens of Diphtheria from Each County.

	Pos.	Neg.	Total.		Pos.	Neg.	Total.
Adams	1	1	2	Lawrence .....	..	1	1
Allen .....	..	4	4	Madison	33	52	85
Bartholomew ...	2	2	4	Marion	41	114	155
Benton	1	3	4	Marshall	11	25	36
Blackford .....	..	1	1	Martin	102	401	503
Boone	1	3	4	Miami	2	15	17
Brown .....	..	..	..	Monroe	10	4	14
Carroll .....	..	4	4	Montgomery ...	20	13	33
Cass	12	21	33	Morgan	4	4	8
Clark	1	1	2	Newton	1	6	7
Clay	7	25	32	Noble	4	16	20
Clinton .....	..	1	1	Ohio .....	..	..	..
Crawford .....	..	1	1	Orange	6	5	11
Davless	11	10	21	Owen .....	..	2	2
Dearborn	5	5	10	Parke	2	4	6
Decatur	27	16	43	Perry	6	4	10
Dekalb	1	5	6	Pike	3	16	19
Delaware	23	56	79	Porter	1	1	2
Dubois .....	..	2	2	Posey	5	5	10
Elkhart	60	72	132	Pulaski .....	..	..	..
Fayette	15	26	41	Putnam	6	5	11
Floyd	10	26	36	Randolph	4	11	15
Fountain	7	10	17	Itipley	1	4	5
Franklin	1	3	4	Rush	4	11	15
Fulton	1	4	5	Scott	3	1	4
Gibson .....	..	..	..	Shelby	1	1	2
Grant	3	18	21	Spencer	3	5	8
Greene	7	4	11	Starke .....	..	1	1
Hamilton	6	9	15	Steuben .....	..	1	1
Hancock	3	7	10	St. Joseph.....	84	159	243
Harrison .....	..	5	5	Sullivan .....	..	4	4
Hendricks	7	34	41	Switzerland	3	..	3
Henry	34	59	93	Tiptecanoe ....	..	..	..
Howard	9	33	42	Tipton	2	7	9
Huntington	4	11	15	Union .....	..	11	11
Jackson	17	24	41	Vanderburgh ...	2	2	4
Jasper	1	7	8	Vermillion .....	..	6	6
Jay	3	1	4	Vigo	38	54	92
Jefferson	10	13	23	Wabash	6	11	17
Jennings	3	4	7	Warren .....	..	1	1
Johnson	4	3	7	Warrick .....	..	..	..
Knox	11	20	31	Washington ...	..	..	..
Kosciusko	9	16	25	Wayne	20	52	81
Lagrange	22	30	52	Wells .....	..	..	..
Lake	12	25	37	White .....	..	1	1
Laporte	3	10	13	Whitley .....	..	..	..
Totals	354	635	979	Totals	437	1,036	1,473

The analysis of 374 positive first cultures with which the age and sex of the patients were given is shown in Table 16.

TABLE 16.
Showing the Age and Sex in 374 Positive First Cultures.

Age.	Males.	Females.	Totals.	Per Cent.
Up to 5 years.....	31	47	78	20.6
6 to 14 years.....	111	90	201	53.7
15 to 20 years.....	16	27	43	11.5
21 years and up.....	19	33	52	14.2
Totals.....	177	197	374	100.0

These percentages correspond closely with those obtained by a similar analysis last year. The percentages of the combined work of the two years, based on 625 positive first cultures, are shown in Table 17.

TABLE 17.
Showing the Influence of Age on the Morbidity of Diphtheria.
(Based on 625 Positive First Cultures.)

Age.	Number of Cases.	Per Cent.
Up to 5 years.....	129	20.5
6 to 14 years.....	329	52.8
15 to 20 years.....	72	11.5
21 years and up.....	95	15.2
Totals.....	625	100.0

This analysis shows unmistakably the influence of school attendance upon the incidence of diphtheria. More than half of these cases were in children in the grammar school age, while nearly two-thirds were in the grammar and high school ages. The influence of schools is also shown by the fact that the average number of positive cultures received per month during the months of September to April, inclusive, was 84, while during the remainder of the year the average per month was only 29. The average number of cases per month during the first half of the school year was 128, during the last half only 37. The analysis of the work of the past two years shows the same relatively greater prevalence during the earlier months of the school year.

The fact that 15 per cent. of these positive cultures were from adults impresses the truth that diphtheria is not a disease which is

limited to children. It should be as much a matter of routine to take cultures from every case of sore throat in adults as in children.

The relation of clinical to bacteriologic diagnosis is shown in Table 18.

TABLE 18.
Showing the Relation of Clinical to Bacteriological Diagnosis.
(Based on 1,174 Examinations.)

CLINICAL DIAGNOSIS.	BACTERIOLOGIC DIAGNOSIS.		Total.	Per Cent. of Cases in Which Bacteriologic and Clinical Diagnoses Correspond.
	Positive.	Negative.		
Diphtheria.....	185	152	337	55.0
Not Diphtheria.....	73	337	410	82.0
Doubtful.....	110	317	427	.....
Totals.....	368	806	1,174	.....

From this table it is seen that only 55 per cent. of cases diagnosed diphtheria by the physician actually prove to be such on bacteriological examination. This lack of correspondence between the clinical and bacteriological diagnoses may be due to several things. In the first place, the physician may have changed his diagnosis before he receives the report from the laboratory. In cases of laryngeal or nasal diphtheria the bacilli may not be reached with the swab. If an antiseptic gargle or spray has been used an hour or so before taking the culture, diphtheria bacilli, although present in the throat, may not show up in the culture. Failure to inoculate the medium properly may result in some negative cultures from real cases of diphtheria. This is not likely to occur if the inoculation is made by an expert. Finally a very few diphtheria bacilli in the presence of many other varieties may be overlooked by the bacteriologist. This probably does not occur often.

While the clinical diagnosis of the *disease* of diphtheria, even in the presence of a membrane, is subject to many sources of error, it is altogether impossible to detect by any clinical means a carrier of the *bacilli* of diphtheria. The relation of the presence or absence of a membrane or exudate to the bacteriologic diagnosis is shown in Table 19. From this table it is seen that the presence of a membrane or exudate has only a limited value in diagnosis.*

*It was impossible to make a reliable distinction between exudate and membrane from the data given by physicians. If membrane had been definitely differentiated from exudate, the percentage of cases with membrane showing diphtheria bacilli would probably have been greater than 36 per cent. Since the data on which these figures are based indicate that there is not a clear distinction in the mind of the average practitioner between an exudate and a membrane, the statement concerning the diagnostic value of a membrane exudate is probably correct.

TABLE 19.

Showing the Relation of Membrane or Exudate to the Bacteriologic Diagnosis.

	BACTERIOLOGIC DIAGNOSIS		Total.	Per Cent. Positive.
	Positive.	Negative.		
Membrane or exudate present.....	321	569	890	36.0
Membrane or exudate absent.....	23	149	172	13.0
Totals.....	344	718	1,062	.....

The finding of diphtheria bacilli in the throats of 13 per cent. of the patients with no membrane or exudate emphasizes the importance of healthy carriers of diphtheria bacilli as disseminators of the disease. The role of carriers is even more strongly illustrated when we analyze those cases in which some information was given in regard to exposure. These results are given in Table 20.

TABLE 20.

Showing the Relation of Exposure to Subsequent Development of Diphtheria.

	BACTERIOLOGIC DIAGNOSIS.		Total.	Per Cent. Positive.
	Positive.	Negative.		
Patient known to have been exposed.....	81	116	197	41.2
Diphtheria in community but patient not known to have been exposed.....	112	372	514	21.7
Patient not known to have been exposed.....	142	221	333	42.6
Totals.....	335	709	1,044	.....

From Table 21, three important facts concerning diphtheria become evident. First, not more than one-half of the persons who come in actual contact with a case of diphtheria get the bacilli in their throats. This at once raises the question of the use of immunizing doses of antitoxin on all contacts. When these contacts can be watched for the first symptoms of sore throat and the situation controlled thoroughly by bacteriologic examinations, it would seem that the wholesale use of immunizing doses of antitoxin on all contacts regardless of the result of bacteriologic examinations is unnecessary. Such wholesale use of this very valuable and efficient remedy is not good policy from a public health point of view for two reasons. In the first place, it may sensitize the patient to horse serum so that there may be danger of an anaphylactic reaction in case it should become necessary later to give him a curative dose of antitoxin. In the second place, it is likely to give the community

a false sense of security. The person who has received an immunizing dose of antitoxin is in little danger of suffering from diphtheria while the immunity lasts, but because he is immune he may become a carrier of virulent diphtheria bacilli and thus be a serious source of danger to others. Hence it is necessary that immunized persons be controlled most carefully by bacteriologic examinations.

From Table 20 it may also be concluded that when there is diphtheria in a community, a larger number of sore throats are due to diphtheria bacilli than in a diphtheria-free locality and that a relatively large per cent. of healthy persons carry diphtheria bacilli in their throats. A considerable number of the 112 positive cultures were from persons with no symptoms of diphtheria.

The fact that a larger percentage of positive cultures were obtained from unexposed persons than from the exposed, may appear surprising. It is explained, however, by the fact that where diphtheria is not known to be present, the majority of the cultures will be from patients who show some symptoms. It is to be expected that the per cent. of such cultures which prove positive will be greater than a similar number of cultures, some of which came from apparently healthy throats. The most important feature of this part of the table is the proof it furnishes of damage done by healthy carriers of diphtheria bacilli. Of 335 patients with diphtheria bacilli, 142 got their infection from unknown sources. Healthy diphtheria bacilli carriers, themselves ignorant perhaps that they were exhaling dangerous material, were undoubtedly responsible for a large per cent. of these infections.

During the year it became necessary to secure new diphtheria outfits, inasmuch as the ones previously in use did not comply with the new United States postal laws and regulations. The outfit now consists of two mailing cases, one fitting into the other, the inner one being of tin. These outfits, complete, cost \$41 per thousand.

Diphtheria at Loogootee.—During the early autumn of this year a peculiarly obstinate epidemic of diphtheria occurred at Loogootee, in Martin County. The day and Sunday schools were closed, the sick children were rigidly quarantined, and antitoxin was used freely, both in curative and immunizing doses. The people of the town were much alarmed because several deaths from diphtheria had occurred during the previous spring in Cannelburg, six miles west of Loogootee. The local health officer, Dr. J. W. Strange, therefore, had the hearty and active support of the citizens in his efforts to stamp out the disease.

When the schools were again opened, new cases immediately

occurred among the pupils. The schools were again closed and disinfected and antitoxin used freely as before. After some days the schools were again reopened, with a repetition of the previous occurrence. By this time the health officer was becoming exasperated and the people less panic-stricken because the disease appeared to be in such a mild form.

At this juncture Dr. Strange called on the State Bacteriological Laboratory for assistance, and Dr. Wm. Shimer was sent, on October 13, to Loogootee, with the necessary equipment for taking cultures in a wholesale manner from the children of the public school. The following order was issued by Drs. Strange and Shimer: "All children excluded from school on account of the present epidemic of diphtheria will be allowed to return on October 17th. Cultures must be taken from all children returning to school on the above-named date. All children who have recently had diphtheria or in whose family there has recently been diphtheria, must present to the superintendent of schools a negative report as to diphtheria bacilli in their throats from the Bacteriological Laboratory of the Indiana State Board of Health."

Cultures were taken on October 13th from the throats of 152 children in the public school, of which 11 were found to contain diphtheria bacilli. During the next ten days Dr. Strange sent cultures from 130 more, and 24 of these proved positive. There were thus found 35 diphtheria bacilli carriers among the pupils of the public schools. On October 26th Dr. Strange sent cultures from the throats of 122 pupils in the local parochial school, and 25 were found to contain diphtheria bacilli. During the next few weeks about 75 more cultures were received from Dr. Strange, most of them being for release from quarantine. Altogether, 479 cultures were received from Loogootee, of which 82, or 17 per cent., were positive. This includes a number of second cultures taken for release from quarantine after definite treatment of the throat to remove the bacilli. Of the 282 cultures from the public school, 13 were second cultures taken for release from quarantine, and of the latter, five were positive. Hence, there were 269 first cultures from public school children, 30 of which, or 11 per cent., were positive. Of 122 first cultures from the parochial school 25, or 20.4 per cent., contained diphtheria bacilli.

Of the 82 positive cultures, 68 were first cultures, the remaining 14 being taken for release from quarantine and found to be positive. Of the 68 positive first cultures, 33 were from families in which there was more than one case, as follows: In 11 families, 2

cases; in 2 families, 3 cases; in 1 family, 5 cases. It is important to remember that these children were apparently healthy bacilli-carriers and not patients actually sick of the disease.

Less than half of the positive cases were actually held in quarantine until a second culture proved negative. Twenty-three were negative on the first return culture; 2 were negative on the second; and 2 only on the third. In six cases the last culture for release was positive. In one instance the first release culture was negative and a subsequent one taken thirteen days later was positive.

Of 26 cases released on negative cultures the results were as follows:

Culture negative on 4th to 6th day in	4 cases.
Culture negative on 7th to 9th day in	9 cases.
Culture negative on 10th to 12th day in	4 cases.
Culture negative on 13th to 15th day in	4 cases.
Culture negative on 16th to 18th day in	1 case.
Culture negative on 19th to 21st day in	4 cases.

26 cases.

Of the 6 cases in which the last culture was positive, 3 were taken on the 8th day, and 1 on the 18th, 20th and 22d days, respectively.

During October, 72 positive cultures were received; in November 8 (7 of them new cases); and up to December 6th, 2 (both new cases). Hence, in spite of the strenuous efforts put forth by Dr. Strange, the disease had not yet been completely eradicated and care is still necessary to prevent another outbreak.

Diphtheria at Yellowstone, Monroe County.—On November 22, Dr. Fletcher Gardner, County Health Commissioner, sent cultures from the throats of 14 children in the Yellowstone school to the State laboratory. He had been receiving reports of cases in this district for some time. Ten of these cultures contained diphtheria bacilli. On November 29th Dr. Simonds visited the school with Dr. Gardner and took cultures from the throats of twenty-one children and the teacher. None of these cultures was positive. The sanitary condition of the school was very bad. It stood on the bank of a creek and when the water was high it came up into the house. There were no toilets of any kind.

Diphtheria at Noblesville.—Cultures were received on November 3d from 129 children in the primary department of one of the Noblesville schools. Thirty-nine contained diphtheria bacilli. The

children ranged from 6 to 13 years of age. Almost 60 per cent. of them had greatly enlarged tonsils, and at least 80 per cent. had some pathological condition in their throats and mouths, such as bad teeth, slightly enlarged tonsils, etc. The school was closed and the epidemic quickly subsided.

Epidemic of Diphtheria in Orphans' Home at Mishawaka.—On August 25, 1911, Dr. C. A. Dresch of Mishawaka, sent 114 cultures from the throats of the children in the Orphans' Home of the Children's Aid Society. Of these, 14 were frank positives and 10 contained suspicious organisms. On August 31st, 23 cultures were received, which gave 10 positives. Between this date and September 16th, 27 cultures were taken from throats of children whose cultures had previously been positive. Altogether 164 cultures were received, 41 of which were positive and 10 suspicious. Children whose cultures contained diphtheria bacilli were immediately quarantined and not released until it had been proved that diphtheria bacilli were no longer present.

Diphtheria at Lewisville.—An epidemic of diphtheria at Lewisville was investigated by Dr. Shimer, whose report is as follows:

“At the request of a resident of Lewisville, I made an investigation December 20, 1910, of a diphtheria epidemic said to be present there. Two weeks previous to my visit a girl 12 years old, in the family of a Mr. Myers, had been taken to Dr. Gronendyke of New Castle, Indiana, for paralysis of the soft palate. He diagnosed the condition as post-diphtheritic paralysis. For several weeks prior to my visit there had been several mild cases of sore throat which had been diagnosed tonsillitis. The village school was closed Friday previous to my visit.

“I found several families carefully quarantined, but there were several cases of sore throat reported that had never been seen by a doctor. I advised that all Christmas entertainments be abandoned and release cultures be taken from all cases found to be diphtheria by bacteriological examination. Several cases were present on January 2, 1911. We informed Dr. Bartlett that the laboratory would be very glad to make bacteriological examinations of all the children returning to school at that time.”

Typhoid Fever.—The total number of routine Widal tests was 1,510, of which 100, or nearly 7 per cent., were positive. In addition to these, 428 specimens of blood were tested for power to agglutinate paratyphoid bacilli, all of which proved negative. One

hundred specimens of blood from persons who had been vaccinated against typhoid were also examined. Hence a total of 2,038 agglutination tests were made during the year.

The number of routine Widal tests by months is shown in Table 21.

TABLE 21.
Showing the Number of Widal Tests by Months.

MONTH.	Positive.	Negative.	Total.
October, 1910.....	24	193	217
November, 1910.....	10	123	133
December, 1910.....	4	62	66
January, 1911.....	6	69	75
February, 1911.....	0	69	69
March, 1911.....	2	76	78
April, 1911.....	0	69	69
May, 1911.....	6	80	86
June, 1911.....	5	80	85
July, 1911.....	10	153	163
August, 1911.....	24	251	275
September, 1911.....	9	185	194
Totals.....	100	1,410	1,510

The number of specimens of blood for the Widal test received from each county is shown in Table 22.

TABLE 22.

	Pos.	Neg.	Total.		Pos.	Neg.	Total.
Adams .....	..	7	7	Lawrence	4	8	12
Allen	3	13	16	Madison	5	60	65
Bartholomew ...	..	12	12	Marion	19	268	287
Benton .....	..	6	6	Marshall .....	..	3	3
Blackford .....	..	6	6	Martin .....	..	2	2
Boone	1	11	12	Miami	2	26	28
Brown .....	..	..	..	Monroe .....	..	6	6
Carroll	1	11	12	Montgomery	1	12	13
Cass .....	..	2	2	Morgan .....	..	2	2
Clark .....	..	3	3	Newton	1	7	8
Clinton .....	..	10	10	Ohio .....	..	..	..
Crawford .....	..	3	3	Orange .....	..	2	2
Davies .....	..	2	2	Owen	1	8	9
Dearborn	1	6	7	Parke .....	..	3	3
Decatur .....	..	19	19	Perry .....	..	8	8
Dekalb .....	..	6	6	Pike .....	..	7	7
Delaware	2	32	34	Porter .....	..	3	3
Dubois .....	..	2	2	Posey	1	6	7
Elkhart	3	29	32	Pulaski .....	..	..	..
Fayette .....	..	18	18	Putnam .....	..	6	6
Floyd .....	..	4	4	Randolph .....	..	13	13
Fountain .....	..	9	9	Ripley .....	..	12	12
Franklin	1	8	9	Rush .....	..	9	9
Fulton	1	10	11	Scott .....	..	..	..
Gibson .....	..	4	4	Shelby	2	7	9
Grant	5	40	45	Spencer	6	34	40
Greene .....	..	12	12	Starke .....	..	2	2
Hamilton	3	34	37	Steuben	1	9	10
Hancock	2	15	17	St. Joseph.....	2	59	61
Harrison .....	..	2	2	Sullivan .....	..	2	2
Hendricks	2	19	21	Switzerland ....	..	3	3
Henry	1	12	13	Tippecanoe	2	41	43
Howard .....	..	12	12	Tipton .....	..	7	7
Huntington	2	7	9	Union .....	..	7	7
Jackson .....	..	14	14	Vanderburgh ...	2	46	48
Jasper .....	..	10	10	Vermillion	1	11	12
Jay .....	..	2	2	Vigo	2	30	32
Jefferson	2	15	17	Wabash .....	..	1	1
Jennings .....	..	9	9	Warren .....	..	5	5
Johnson .....	..	5	5	Warrick .....	..	..	..
Knox .....	..	18	18	Washington ....	..	2	2
Kosciusko	3	42	45	Wayne	10	53	63
Lagrange	1	14	15	Wells .....	..	1	1
Lake	1	34	35	White .....	..	15	15
Laporte	1	22	23	Whitley .....	..	..	..
Totals	36	575	611	Total	64	835	890

THE NEW WIDAL OUTFIT.

The use of blood dried on a mica plate has not given us satisfaction in our Widal work. We have now prepared an outfit in which whole blood may be sent to the laboratory. From this we can make accurate dilutions of the serum. The outfit consists of a small cylindrical mailing case with a screw cap. Inside this are two spindle-shaped sterile capillary tubes sealed at both ends, together with an identification card and directions for collecting the specimen. These directions are as follows:

1. With clean fingers break off neatly and *squarely* the tips of *both* ends of the spindle-shaped glass bulb.

2. Cleanse lobe of patient's ear or tip of his finger with soap and water, followed by alcohol, and prick it well with a sterile needle. A *large-sized* straight Hagedorn is the best.

3. As the blood wells out, holding the tube horizontal place one end in the drop and allow the spindle-shaped bulb to fill at least one-half full. Three or four large drops will be sufficient. If too small a needle has been used the blood will not well out so freely and the finger or lobe of the ear may have to be gently "milked." *Fill the tube from one end only.*

4. When the bulb is half full seal off the *empty* end of the tube in the flame of a candle or match. As soon as this cools, shake the blood into the sealed end with a motion like that with which you shake down your thermometer. Then seal off the other end. *Be sure that both ends are completely sealed.*

5. Fill out accompanying card and mail it to us with the tube of blood in the mailing case.

We hope with this new outfit to get results that will be more satisfactory to us and to the physicians sending specimens to the laboratory. To be satisfactory, however, it will be necessary to secure at least three drops of blood and to follow to the letter the directions for sealing the tubes. If the tubes are not perfectly sealed there will be complete loss of the serum from leakage. These outfits have been supplied to health officers for distribution. We would like to urge health officers to acquaint themselves thoroughly with the technique of collecting blood in the spindle-shaped tubes in order that they may instruct the physicians in their community in the use of the new outfit.

These outfits complete cost \$14.75 per thousand.

SMALL EPIDEMIC OF TYPHOID FEVER NEAR COVINGTON.

The following report of an epidemic of typhoid fever near Covington was furnished by Dr. J. R. Hicks, County Health Commissioner of Fountain County:

"The following cases illustrate the fact that the surface well in the rural districts is just as much a menace to health and life as it is in the towns and cities.

"On the morning of August 15, 1910, Oral B. Claypool, female, age 31, living on a farm two miles east of Covington, called at my office for medicine—heavily furred tongue, flushed face, rapid pulse, high fever, constipation, intense headache, and the most severe pain in muscles of neck and back. Considered as a probable typhoid and sent home and to bed with directions as to destruction of secretions and excretions. Returned next morning for medicine; was more comfortable, but was urged to return home and to bed, and to observe strict precautions as to stools, urine, etc. The third morning (August 17th) she sent in for medicine, condition about the same. No blood smear for Widal had been used because the demand for outfits from physicians over the country had exhausted the supply and was then anxiously awaiting a new lot. On the morning of August 18th, Dr. Andrus was called to the young lady's home, diagnosed as typhoid and prescribed. The doctor returned August 19th, 20th, and 21st. August 22d, Dr. McKee was called and continued the physician until her death, September 19th, his report of death stating the cause, endocarditis, duration 6 days; contributory, peritonitis following abscess of tube, duration 20 days.

"The young lady boarded at the Young home, a relative, intending to teach school in the neighborhood. It is not known where she contracted the disease, but it is a matter of history that a number of typhoid cases had occurred on the same farm several years (at least more than ten) ago. The urine and stools were thrown in a surface privy about 50 feet from the surface well, the water of which is used by the family. Well is about 20 feet deep, and the surface drain of the privy above ground appears to be away from the well. Soon after the death of Miss Claypool, the privy was filled up and the building moved a few feet away, but the family still continued to use the water from the well.

"On September 30th, Clara Young, age 9, and Edith Young, age 13, were reported typhoids. Edith Young died October 24th, cause typhoid; duration 31 days. October 14th, water from the well was examined by the State laboratory and a presumptive test for *B. coli* was positive. On October 30th, Jesse Hershberger, male, age 18, was reported typhoid. He is one of the nearest neighbors, living three-fourths of mile southeast, and had sat up at the Young home during the night of the death of Miss Claypool, and during

that time drank freely of the water from the well. October 21st, Miss Bessie Nicholas, age 23, was reported typhoid. She lives one mile northwest, and sat up at the Young home the same night that Jesse Hershberger did, also drinking the water from the same well. Three other neighbors who drank sparingly of the water the same or next night were made ill, but recovered quickly. October 26th, Alva Young, female, age 10, and M. M. Young, father, age 41, reported typhoids. November 1st, Lucile Young, age 6, reported typhoid. Thus five of the Young family had typhoid, two of the neighbors, and the original case, making eight in all, with three deaths. Jesse Hershberger died October 29th.

"Have since learned that some of the family, who came from Saybrook, Ill., to return with the body of Miss Claypool, developed typhoid, the result of drinking from the polluted well.

"Dr. J. P. Simonds, Superintendent State Laboratory of Hygiene, visited the locality November 2d and went over the ground thoroughly, taking samples from various surface wells in the vicinity; also met and advised a number of the neighboring families."

Examination of three samples of water showed the following results:

Water from Hershberger's barnlot well gave no gas in dextrose broth and no red colonies (*B. coli*) grew on Endo's medium.

Water from Hershberger's house well gave 40 per cent. gas in dextrose broth and a very few red colonies (*B. coli*) grew on Endo's medium.

Water from Young's well gave 35 per cent. gas in dextrose broth. A number of red colonies grew on Endo's medium, some of which were proved by cultures to be *B. coli*.

INVESTIGATION AT WINONA LAKE.

On account of the occurrence of two or three cases of typhoid fever at Winona, and the damaging report that the disease was epidemic, the County Health Commissioner of Kosciusko County requested an investigation by a member of the laboratory staff.

On April 19, 1911, in company with Dr. W. L. Hines, Health Commissioner of Kosciusko County, Mr. Jonathan Rigdon, Mr. R. H. Willis, Mr. J. O. Frank, Mr. F. A. Burtsfield, Mr. J. H. Criswell and Mr. W. G. Fluegel, an investigation of the sanitary conditions at Winona Lake was made by Dr. J. P. Simonds. The work had to be done in a steady downpour of rain and could not be as

thorough as could be wished. We were able, however, to secure enough information to justify certain recommendations. The results of the investigation may be presented under three heads, namely, first, the milk supply; second, the water supply; and third, the system of sewage disposal.

a. THE MILK SUPPLY.

The concession to sell milk on the park grounds is granted to one man. He has no cows of his own, but buys all his milk from three or four farmers. He supplies these farmers with ordinary large milk cans in which they bring the milk to the dairy "within an hour after it is drawn."

The house in which the milk is bottled belongs to the Winona Lake Corporation and goes with the concession to sell milk on the grounds. It is situated outside the park, about seventy-five yards from the east border. The building is on very low ground. On the slope some forty to sixty feet above and to the south of the building are a surface privy and a dwelling. Surface drainage is from these houses directly toward the milk-house. About thirty feet north of the milk-house is a small barn with two large manure piles entirely uncovered.

The milk-house itself is constructed of wood, with a cement floor. The windows and doors are screened, but there are numerous knot-holes and cracks in the walls that would admit flies in abundance in season. The walls are low and the building is unceiled. The floor, walls, tables, etc., were only fairly clean.

The empty, returned milk bottles are washed on the inside with a brush, rinsed with hot water and inverted on a drain board until used. That the cleaning is by no means perfect is shown by the accompanying bottle, which was obtained from one of the gentlemen who accompanied me on the tour of inspection. He stated that this bottle had been rinsed in cold water after pouring out the milk delivered in it. The bottles are filled by a machine, which fills four bottles at a time. This machine is washed after each using and rinsed with hot water. The large milk cans, on being emptied, are washed, rinsed with hot water and then inverted over a jet of steam for four or five minutes, or "until the next can has been washed." In other words, there is really no effective sterilization of the milk utensils after using. The dairyman probably does as well as he can in his present location.

b. THE WATER SUPPLY.

It was stated by Dr. Hines that the supply of water from the gravel pit north of the Pennsylvania Railroad had been abandoned and that all water is now obtained from deep driven wells. Serious doubt was expressed as to the ability of these wells to supply sufficient water during the crowded summer season. If this should occur there appear to be four possible additional sources of supply:

1. They can again use water from the gravel pit. It was not possible, on account of the rain, for us to investigate this source of supply. But it has been carefully examined by both Mr. Barnard and Mr. Brewster, whose reports have been made to the board.

2. There are on the grounds a number of springs and two or three flowing artesian wells, the greater part of whose water is wasted. These might be connected with the pumping station in such a way that water which is now wasted could be directed into the general water supply. Water from the artesian wells would undoubtedly be safe. The presence of a number of sewer lines at no great distance from some of these springs would render the safety of their water doubtful. Water from the largest of these springs, called the Studebaker, when inoculated into fermentation tubes, did not cause the formation of gas, and when planted on Endo's medium no red colonies developed. There was no growth in the *closed* arm of the fermentation tube. Hence, there is no indication of any contamination of this spring with sewage at present. The possibility of such contamination must be borne in mind, however.

3. The use of water from two or three shallow dug wells on the grounds. What were said to be two of these wells were examined and were found to be very bad. The water stands in them within 12 to 18 inches of the surface of the ground and is, no doubt, composed chiefly of "seep water" from the lake. There is one septic tank within a hundred and fifty feet of one of these wells and situated between it and the lake. The gross appearance of the water as it stood in these wells was filthy. Each well had an old, partially rotten wooden cover. There were pieces of wood, and a filthy-looking scum floating on the surface. Fermentation tubes inoculated with this water did not, however, show gas and no red colonies grew on Endo's medium. Hence, it is probable that there was no contamination with sewage at the time of the examination.

4. The installing of a sufficient number of deep driven wells to supply the necessary amount of water. This is the only plan

that should receive serious attention. The present water supply, derived from such wells, appears to be of most excellent quality. Two samples—one taken from the tap at the public school, the other from the tap in the Westminster Hotel—produced no gas in dextrose broth and no red colonies on Endo's medium. There was little or no growth in the closed arm of the fermentation tube inoculated with water from the tap in Westminster Hotel.

The water is now pumped into one of the two large elevated wooden reservoirs on the east side of the park. Both reservoirs are used in the summer. The trapdoor to the unused one was open and English sparrows were building nests inside it. The bottom was covered by several inches of mud and slime.

In the south end of the park there are a number of dug wells fitted with pumps. These supply water to persons who rent the adjacent cottages during the summer. The largest septic tank on the grounds is between these wells and the lake.

C. THE DISPOSAL OF SEWAGE.

The sewage of the majority of the buildings inside the park is disposed of by means of septic tanks. The effluent from these tanks flows directly into Winona Lake. All but one of these tanks are small. They are constructed in pairs, each measuring from four to six feet in diameter and ranging from two to four feet in depth. The contents of the first tank of each pair was covered with a thick scum; the surface of the second usually showed a few floating particles of solid matter. In most instances the inflow pipe projected a few inches from the upper part of the wall of the tank and the sewage falling on the scum kept it constantly disturbed.

One of these tanks, namely, that nearest the Hatfield residence, was examined with some care. This consists of two small circular connecting tanks, each approximately four feet in diameter, the contents showing a depth of about two feet. These tanks had recently been cleaned. The scum on the first was broken. The surface of the second showed a considerable amount of floating solid matter and gave off a very foul odor. Sewage from sixteen to twenty houses passed through this tank. It is evident that when all these dwellings are occupied this tank will be entirely inadequate to the work put upon it. It would be impossible for sewage to remain in the "putrefaction tank" a sufficient time to allow the necessary putrefactive and liquifying changes to take place. A sample of the contents of the second tank yielded 20 per cent. gas

in dextrose broth, and about one-half the colonies on Endo's differential medium were found to be fecal bacteria, chiefly *B. coli*. Hence, it is evident that there is very little putrefaction of the sewage in this tank and that the effluent is a dangerous source of pollution of the lake.

With the exception of the large tank, to be mentioned presently, and those on the "Island," all the septic tanks in the park are similar to the one just described, and are hopelessly overtaxed. At present each septic tank on the "Island" received the sewage from only one house or occasionally from two houses. The effluent passes directly into the lake without filtration or other treatment.

The largest septic tank on the grounds receives the sewage from the Westminster Hotel. The crude sewage flows into a large reservoir about ten feet in diameter and six to eight feet in depth. From here it passes into a second tank of similar dimensions. The inflow and outflow pipes from each of these tanks are submerged. The contents of both tanks are covered with a scum, that on the first being quite thick and unbroken. The effluent from the second tank flows into an enclosed area about twenty feet square, where it falls over a series of three "terraces." A sample from the last of these "terraces" yielded 25 per cent. gas in dextrose broth, and many of the colonies which grew on Endo's medium were *B. coli*. From the last "terrace" the sewage flows through pipes to a third, smaller reservoir some sixty feet away, and from this passes directly into the lake. A sample of the contents of this reservoir gave exactly the same results as that from the last "terrace." The buildings in the south end of the park are not connected with the city water supply and therefore have no septic tanks. They are furnished, instead, with outdoor privies. These are of the open surface variety and none that we saw were fly proof.

d. RECOMMENDATIONS.

1. The location of the milk-house is exceedingly bad. A better building that can be made fly proof should be constructed on higher ground at a safe distance from manure piles and surface privies.

2. While there are several possible sources of drinking water, if the present supply proves inadequate during the summer season, there is only one that should be seriously considered, namely, the construction of a sufficient number of deep driven wells to furnish the maximum amount of water known to be needed. The unused elevated reservoir should be thoroughly cleaned and the cover made bird proof before being put in use again. The safety of the water

from the springs on the grounds is questionable, because of the presence of sewer lines and septic tanks.

3. The present system of sewage disposal is entirely inadequate and is a source of serious pollution to Winona Lake. The lake water is not used for drinking purposes, but bathing at the regular bathing beach, which is located very near the outflow of a number of these overtaxed and inadequate septic tanks is neither safe nor cleanly. If the lake is to be protected from pollution the whole plan of sewage disposal should be submitted to a competent sanitary engineer, with instructions to devise a system that will render the effluent harmless.

MALARIA.

Of 203 specimens of blood examined for malaria parasites, 24 were found to be positive. Eighteen of these were of the tertian type, 4 of estivo-autumnal and in 2 the type of organism could not be definitely determined. Dr. A. E. Schweitzer, who has made a study of malaria in Indiana, has analyzed the positive cases discovered at this laboratory as follows:

"From March, 1909, to October, 1911, 52 specimens of blood examined at the State laboratory were found to contain malarial parasites. In 1909 there were 16 specimens; in 1910, 12, and in 1911, 24. Though there has been an increase in the number of positive cases the relative number infected at home remains the same. A total of 25 out of 52, or nearly one-half, were said to have got their infection in this State. Other localities were responsible for cases as follows: South, 4; Arkansas, 5; St. Louis, 2; Illinois, 3; Oklahoma, 2; Louisville, 1; Florida, 1; unknown, 9.

"No positive specimens were received during January or February in any of these years. In March there were 3; in April, 2; in May, 5; June, 4; July, 10; August, 6; September, 9; October, 8; November, 3; December, 1.

"Of the persons infected, 32 were males and 18 females. The sex was not known in two of the cases. The ages range from 4 to 72 years, more than 76 per cent. being 30 or under. The history of a previous attack was not always clear, but was definitely obtained in 22 cases. Twenty patients gave no previous history of malaria.

"The specimens examined had been taken at various times with reference to the onset of the chill. Three specimens were taken before the chill, forty were taken during or after the chill, and one specimen in which many tertian parasites were found was taken

twenty-four hours after the initial rigor. Malarial parasites were found in a few instances, even though quinine had been given in varying amounts.

"Nearly all the positive cases were correctly diagnosed. Two were called typhoid, 3 typhoid or malaria, 1 malaria or anæmia, and 1 which was diagnosed tuberculosis or syphilis gave a history of having been treated for malaria.

"The tertian parasite was found in 35 cases, or 70 per cent.; the estivo-autumnal in 8 cases. In the remaining cases the type could not be determined."

The positive specimens received this year were from the following counties:

NORTHERN SANITARY SECTION.		CENTRAL SANITARY SECTION.		SOUTHERN SANITARY SECTION.	
County.	Cases.	County.	Cases.	County.	Cases.
Carroll.....	1	Tippecanoe.....	1	Dearborn.....	1
Miami.....	2	Fountain.....	1	Sullivan.....	1
		Randolph.....	1	Knox.....	2
		Wayne.....	1	Pike.....	2
		Marion.....	8	Vanderburgh.....	1
				Spencer.....	2

RABIES.

During the year the heads of 243 animals were examined for evidence of rabies. Twenty-two heads were in such a condition of putrefaction or had had the brain shot out of the head so that satisfactory examination was impossible. Of the 221 brains examined, 107 (or 48.4 per cent.) were found positive. An analysis showing the species of animals represented in the 243 heads is given in Table 23.

TABLE 23.

Showing Arrangement According to Species of Animals.

ANIMAL.	Positive.	Negative.	Unfit for Examination.	Totals.
Dog.....	97	96	19	212
Cow.....	3	6	0	9
Hog.....	1	6	3	10
Sheep.....	3	1	0	4
Cat.....	1	3	0	4
Horse.....	1	2	0	3
Human.....	1	0	0	1
Totals.....	107	114	22	243

In addition to the 107 positive cases examined at this laboratory, Professor Burrage of Purdue University reported 9 positive cases (3 dogs, 5 hogs, and 1 horse) diagnosed at the Purdue laboratory. All of these cases were in Tippecanoe County.

The number of heads examined each month is shown in Table 24.

TABLE 24.
Showing Number of Heads Examined for Rabies Each Month.

	Positive.	Negative.	Unfit for Examination.	Totals.
October, 1910.....	6	7	1	14
November, 1910.....	3	6	0	9
December, 1910.....	8	4	0	12
January, 1911.....	8	6	1	15
February, 1911.....	12	4	0	16
March, 1911.....	10	10	0	20
April, 1911.....	12	9	1	22
May, 1911.....	8	12	1	21
June, 1911.....	4	17	6	27
July, 1911.....	8	12	3	23
August, 1911.....	12	14	1	27
September, 1911.....	16	13	8	37
Totals.....	107	114	22	243

The largest number of heads were received during the summer months, but the highest percentage of positives were found in the winter and early spring. Thus, from June to September inclusive an average of 41.6 per cent. of brains examined were found positive; of the brains examined from December to February, inclusive, 66 $\frac{2}{3}$ per cent. were positive.

The counties from which positive heads were received are shown in Table 25.

TABLE 25.
Showing the Counties from Which Positive Brains Have Been Received.

9 Northern Counties—28 cases.

Laporte, 3; St. Joseph, 6; Jasper, 2; White, 7; Carroll, 2; Howard, 3; Miami, 2; Grant, 1; Whitley, 2.

20 Central Counties—47 (56) cases.

Vermillion, 3; Vigo, 6; Tippecanoe, 2 (11); Montgomery, 1; Owen, 1; Monroe, 1; Henry, 1; Hendricks, 2; Clinton, 3; Tipton, 3; Hamilton, 1; Marion, 2; Johnson, 1; Randolph, 1; Bartholomew, 5; Decatur, 2; Shelby, 2; Hancock, 1; Madison, 3; Delaware, 6.

17 Southern Counties—32 cases.

Sullivan, 3; Vanderburgh, 1; Warrick, 1; Spencer, 2; Daviess, 1; Perry, 1; Crawford, 1; Orange, 1; Jackson, 1; Washington, 1; Harrison,

2; Clark, 4; Jennings, 6; Jefferson, 1; Ripley, 2; Dearborn, 2; Switzerland, 2.

Total, 107 cases, including 9 cases reported from the Purdue laboratory by Professor Burrage.

The geographical distribution of cases of rabies during the past four years is shown on the accompanying maps. During the present fiscal year forty-six counties were affected. These counties were arranged in four distinct groups. In the extreme north were St. Joseph and Laporte, from which nine positive heads were received. White, Carroll, Clinton, Tippecanoe, Howard, Tipton, Madison and Delaware counties formed a second badly infected district. The third group was in the western part of the State and included Vermillion, Vigo and Sullivan counties. The fourth group was in the southeastern part of the State and included Decatur, Bartholomew, Jennings, Ripley, Dearborn, Jackson, Jefferson, Switzerland and Clark counties. Twenty-two positive heads were received from this group.

A very extensive territory is thus shown to have been involved. In addition to the somewhat isolated area in the western part of the State it is seen from the map that a wide region of infection extended diagonally from Lake Michigan southeast through the entire length of the State to the Ohio River.

The method of examining brains for evidence of rabies is as follows: The brain and Gasserian ganglion are removed as soon as the head is received. Smears are made from the hippocampus major and stained with eosin and methylene blue according to the method described by Dr. D. L. Harris. If Negri bodies are found the case is reported positive at once. If this examination is negative, sections are made of the ganglion, and the characteristic changes to be found there in cases of rabies are searched for. If no evidence of rabies is revealed by this method and the dog is reported to have bitten some human, a guinea-pig is injected in the subdural space with an emulsion of the suspected brain.

During the year, forty-six guinea-pigs were injected and ten died of rabies. Seven of these were injected with brains of animals found negative on microscopic examination. Five out of the seven had been killed very early in the disease, before the dog had shown any noticeable symptoms. One of the five pigs died on the twentieth day after injection with symptoms which did not resemble rabies, but as autopsy revealed no cause of death the person bitten was advised to take Pasteur treatment. The microscopic examina-

tion of the brains of two dogs which had shown clinical symptoms of rabies failed to show Negri bodies. The guinea-pigs injected with these brains died of rabies.

The following very puzzling incident occurred: The brain of a dog which had bitten a number of persons was received May 11. Microscopic examination failed to show Negri bodies. A guinea-pig was injected on the same day with an emulsion of the brain. On June 22d, the pig appeared to be sick. It refused to eat and had a number of slight convulsions. By June 24th, it had completely recovered. On August 15th, this pig was bled to death, and 0.5 c.c. of its blood serum was used in making an emulsion of a pea-sized piece of dog's brain which contained very many very large Negri bodies. The emulsion was allowed to stand for eight hours and was injected August 17th into the subdural space of a guinea-pig. This animal had not shown any symptoms of rabies at the time this was written (three months after injection). We are still uncertain whether the first dog actually had rabies. The fact that the first guinea-pig recovered is very strong evidence that the symptoms it showed were not those of rabies. But the fact that the blood-serum of this pig appeared to destroy the known rabic virus in the brain of the second dog suggests at least the possibility that it may have had a mild, non-fatal form of rabies which developed the rabicidal power in its blood.

Every effort has been made to assist the local authorities in handling threatened epidemics of rabies. When a positive case of rabies was discovered in any locality the following letter (with blanks properly filled out) was sent to the county health commissioner and local health officer:

DEAR DOCTOR—This is to inform you as health officer that we today received from your community the head of afound to have rabies. The head was sent by.....of..... This is the.....animal found infected in this district within the past six months.

The last Legislature passed the following law (H. B. 57):

Sec. 5. Whenever, in the judgment of the health officer of any town, city or county, there is danger of the outbreak or spread of hydrophobia within his jurisdiction, he shall thereupon order, with the consent and aid of the sheriff, the muzzling or quarantining in such territory as they may deem proper of all dogs and other animals during such period as they may deem necessary. Such order shall be given in writing to the person or persons concerned, if demanded. All police officers, sheriffs, constables and marshals shall kill any dog running at large without a muzzle in the locality where the muzzling of dogs is ordered as herein provided.

Sec. 6. Any officer neglecting or refusing to fulfill the duties as set forth herein, or any person or persons who violate this act, or who may resist legal orders as herein provided, shall, upon conviction, be fined in any sum not less than five nor more than fifty dollars.

This information is sent you in order that you may take such steps as are necessary for the suppression of the threatened outbreak. Yours very truly,

J. P. SIMONDS, Superintendent.

The health officers have shown energy and enthusiasm in the use of their power to deal with epidemics under the provisions of the law. It is to be expected that the rabies situation will be greatly improved during the next twelve months as a result of the enforcement of muzzling by local health officers.

Case of Hydrophobia in a Boy.—About January 1, 1911, an 8-year-old boy living near Hillsdale, Vermillion County, was bitten on the face by a strange dog which met him on the way to school. The dog disappeared and nothing was thought of the matter until four weeks later, when the child began to be ill. He was sent to Indianapolis immediately, and through the efforts of Dr. J. N. Hurty, Secretary of the State Board of Health, was placed in the City Hospital. He was attended by Drs. C. F. Neu and T. V. Keene, and was seen by members of the laboratory staff. The child died on February 8th, after an illness of eleven days. The symptoms were those of the so-called dumb form of hydrophobia.

The autopsy by Dr. C. F. Neu showed no gross lesions except some congestion of the vessels of the brain. The brain was examined at this laboratory and many large and medium-sized Negri bodies were found. Three guinea-pigs were injected: The first, injected into the peritoneal cavity with 4 c.c. of cerebro-spinal fluid removed from the child after death, did not show any symptoms of rabies. Two other pigs were injected into the subdural space with an emulsion of the boy's brain. Both of these died of rabies, one on the 15th, the other on the 18th day after injection.

The protocol of the pig dying on the 15th day is as follows:

February 8th. Injected subdurally with emulsion of boy's brain.

February 17th. First noticeable symptoms. Very nervous; ate very little.

February 18th. More nervous and excitable. Tapping on cage causes it to run wildly about. Ate very little.

February 19th. Slightly less excitable.

February 20th. Became more quiet. Required considerable irritation to make it run about the cage. Would bite at pieces of cabbage as on previous day, but swallowed none. Emaciation became evident.

February 21st. Sat quietly in cage. Did not like to be disturbed. Incomplete control of hind legs.

February 22d. All symptoms worse. Emaciation marked. Sat drawn up in cage most of the time. Trembled a great deal. Occasional general convulsion. Hind legs definitely paralyzed.

February 23. Emaciation very marked. Convulsions occurred more frequently; came on with the slightest irritation, such as touching with a broom straw. In afternoon became totally paralyzed and lay flat on the bottom of the cage. It was then chloroformed.

A fourth guinea-pig injected with an emulsion of the brain of the pig just described, died of violent rabies on the ninth day.

The above record should convince the most skeptical that rabies as a disease is a terrible reality. It is hardly possible that this 8-year-old boy and these guinea-pigs imagined they had rabies and died of imagination.

PASTEUR TREATMENT.

The Hydrophobia Law enacted by the last Legislature provides that the State Board of Health shall furnish free Pasteur treatment for such persons as are "in danger of being affected with hydrophobia and who have no visible means with which to pay for the Pasteur treatment." This work has been done in this laboratory according to rules adopted by the State Board.

The fund created by the Hydrophobia Law did not furnish sufficient money to permit the laboratory to make its own virus, hence it was necessary to procure the material for treatment from outside the State. The first few cases were treated with virus purchased from H. K. Mulford & Co., of Philadelphia; the remainder of the cases were treated with virus furnished by the Hygienic Laboratory of the United States Public Health and Marine Hospital Service.

Sixteen patients were given Pasteur treatment between July 10, 1911, when the fund first became available, and September 30, 1911. Six patients were from Jennings County, three from Vigo County, and one from Randolph, Sullivan, Scott, Hendricks, Blackford, Monroe and Whitley. A brief summary of the cases follows:

Case 1. Alphas Seward (Vigo County), 3-year-old child. Bitten July 6, 1911, on both hands, left ear, face and back by a cat. Examination of cat's brain at laboratory showed many Negri bodies. Treated with Mulford's virus. Very restless and fretful during first few days. On the second day of treatment the site of the bite on the right hand became swollen and painful. A red, ten-

der and swollen area developed at the site of almost every injection, being worst during the first and last days of the treatment.

Case 2. Otte Rippey (Vigo County), 6-year-old boy. Bitten July 6, 1911, on right hand by same cat as in Case 1. Mulford's virus used. Considerable tenderness at site of first injection, continuing one week. Otherwise showed no visible reaction.

Case 3. B. T. Edwards (Randolph County), 64 years old. Bitten July 7, on left hand, by a dog whose brain was found to contain very many Negri bodies. Mulford's virus used. Severe local reaction in the form of red, painful swellings developed at the site of every injection. There was never any indication of any pus infection.

Case 4. J. H. Bailey (Sullivan County), 19 years old. Slight bite June 19 on right hand, by dog proved rabid by laboratory examination. Began treatment (Mulford's virus) July 15th. Slight local reaction after first few injections, and some headache on fourth day of treatment only inconvenience noted.

Case 5. Herschel Smith (Jennings County), 12 years old. Bitten on leg July 17th by dog proved to be rabid. Began treatment (Mulford's virus) July 28th. At time of third injection on first day had temperature of 99.6 degrees, felt very sick and vomited. Second day's temperature 99.2 degrees. After this, suffered no inconvenience and felt quite well during remainder of treatment.

Case 6. Robert Willman (Jennings County), 17 years old. Bitten July 17th on left leg by same dog as in Case 5. Began treatment (Mulford's virus) July 28th. No local or general reactions during any part of treatment.

Case 7. Jim Jenkins (Jennings County), age 46. Bitten July 18th on hand by same dog as in Case 5. Began treatment July 28th. On fourteenth day went home, without cause, but returned on sixteenth day. No local or general reactions.

Case 8. Floyd Rector (Jennings County), age 16. Bitten July 17th on leg by same dog as in Case 5. Began treatment (Mulford's virus) July 28th. On second day had temperature of 100.4 degrees, and felt sick. Throughout remainder of time suffered no local or general reactions.

Case 9. Ezra Turman (Jennings County), age 14. Bitten July 17th on right hand by same dog as in Case 5. Began treatment July 28th (Mulford's virus). On evening of first day and morning of second day had temperature of 100 degrees. Otherwise felt perfectly well throughout entire course of treatment. No local or general reactions.

Case 10. Montana Shaw (Jennings County), age 3. Bitten (or scratched) July 17th, on left arm by same dog as in Case 5. Began treatment (Mulford's virus) July 28th. On fourth day the patient was taken away by mother (with whom the child was not living) without our knowledge and without leaving any explanation.

Case 11. Hazel Passwaters (Scott County), age 4. Bitten August 11 on arm by dog whose head reached the laboratory in a condition which did not permit examination. Began treatment (United States virus) August 17th. No local or general reactions until eleventh day of treatment, when severe urticarial rash appeared on arms and back. Rash continued troublesome for five days and disappeared gradually.

Case 12. Otis Kivitt (Hendricks County), age 6. Bitten August 15th on cheek by dog proved rabid. No local or general reaction until tenth day, when severe urticaria appeared and continued present until treatment was completed. (United States virus used.)

Case 13. Lottie Pittman (Vigo County), age 34. Bitten on right leg and both hands August 30th, by dog which escaped and head was not examined. Began treatment (United States virus) September 6th. Somewhat painful local reaction after first few injections, otherwise nothing unusual.

Case 14. Perry Philabaum (Blackford County), aged 75. Bitten August 31st on right leg by dog which escaped and was not afterwards found. Began treatment September 7th (United States virus). No local or general reaction until tenth day, when he had peculiar sensation, felt very nervous and trembled immediately after injection. This sensation was repeated on the thirteenth and fourteenth days, but was less severe.

Case 15. Owen McCabe (Monroe County), age 47. Bitten August 28th on side by dog proved rabid. Began treatment (Mulford's virus) on September 8th. Considerable local reaction after almost every injection.

Case 16. Charles Penn (Whitley County), age 32. Bitten August 31st on calf of leg by dog. Examination of dog's brain at laboratory gave a doubtfully positive result. Began treatment September 8th. Very slight local reaction. No general reaction.

There is nothing especially noteworthy in any of these cases. The local reactions from the Mulford virus were much more severe than those from the Government virus. The use of the latter has

been entirely satisfactory and has the advantage of being obtained free of cost. The State has thus been saved several hundred dollars.

VENEREAL DISEASES.

1. GONORRHEA.

A total of 534 specimens of pus were examined for gonococci. Of these, 239, or 44.7 per cent., were positive. The results of the examination according to the sex of the patients are shown in Table 26.

TABLE 26.

Showing Results of Examinations for Gonococci Arranged According to Sex of the Patient.

	Positive.	Negative.	Doubtful.	Unsatisfactory.	Totals.
Males.....	152	101	44	2	299
Females.....	75	75	42	5	197
Sex not given.....	12	17	8	1	38
Totals.....	239	193	94	8	534

The number of cases received each month is shown in Table 27.

TABLE 27.

Showing Number Specimens Examined for Gonococci Each Month.

Month.	Positive.	Negative.	Doubtful and Unsatisfactory.	Totals.
October, 1910.....	25	15	3	43
November, 1910.....	18	13	7	38
December, 1910.....	24	21	11	56
January, 1911.....	14	13	11	38
February, 1911.....	20	21	6	47
March, 1911.....	22	23	3	48
April, 1911.....	15	16	9	40
May, 1911.....	14	14	11	39
June, 1911.....	25	13	11	49
July, 1911.....	24	15	12	51
August, 1911.....	21	17	10	48
September, 1911.....	17	12	8	37
Totals.....	239	193	102	534

2. GONORRHEA IN CHILDREN.

Dr. A. E. Schweitzer, who, in the last report, analyzed the results of the examinations of specimens from cases of suspected gonococcus infection in children, adds several new cases and summarizes the work of the two years as follows:

A somewhat extended investigation of literature on the subject of gonorrhea in children, supplemented by a study of case records of five children from whom specimens were received at the State laboratory, emphasized the following points:

(a) Latent gonorrhea in either parent may become a source of infection to the other and later to the child.

(b) There is danger in allowing children to sleep with irresponsible older persons whose venereal history is unknown or suspicious, such as servants, visitors, boarders, or older relatives.

(c) Carelessness with clothing, towels, etc., in cases of known infection is criminal.

(d) A case is not cured when clinical symptoms subside.

(e) It is very difficult for the physician to get reliable history.

A study of case histories received during the current year not only corroborates these facts, but adds another which is often overlooked, namely, that children often do infect each other. In the only male case reported, a boy of eleven years was infected by an elder companion while, "in swimming," two little girls by neighbors' children, and another little girl probably by a boy playmate at school. The other histories show the father to be responsible in one case, a female boarder in one case, while in the remainder no history was obtained.

The youngest child was 16 months old. No definite history of this case could be obtained. The fact that of these nine children seven were females, bears out the assertion that female children are especially susceptible to accidental infections because of the prominence of the external genitalia.

The duration of most of these infections was not determined, as later specimens were sent in only two cases. From only one was a series of specimens received. The data of each examination with the results are given below: The first specimen was received one week after the infection.

February 25, 1911. Very many gonococci; painful micturition; purulent discharge.

March 10, 1911. Many gonococci.

March 23, 1911. Many gonococci; great improvement, no fever, little discharge; "ugly" abdominal symptoms which came up after subsidence of acute inflammatory symptoms, under control.

April 24, 1911. Not many gonococci. Patient much better.

May 29, 1911. Few gonococci. Practically well for some weeks.

July 8, 1911. Urethral smear negative, vaginal smear doubtful.

July 25, 1911. Urethral and vaginal smear few gonococci. Apparently well.

August 5, 1911. Very many gonococci. Recrudescence.

August 20, 1911. Vaginal smear negative, urethral smear contained suspicious organisms. Apparently well.

August 31, 1911. Vaginal smear negative, urethral smear suspicious.

No later specimens were received up to October 1st. Carelessness as to a complete cure, bacteriological as well as clinical, becomes a matter of criminal negligence when one considers the gravity of the results that may follow. An apparent clinical cure may leave the child an infectious agent, while the destructive effect of the disease on the organs of generation producing sterility may sacrifice the child's later happiness.

3. SYPHILIS.

Twenty-one specimens were examined for *spirocheta pallida*, only two of which were found positive. Examinations for spirochetes have not proved satisfactory, chiefly because physicians do not appear to appreciate certain important details in the technic of securing the specimen. Explicit directions for the collection of such specimens are given in the new Book of Instructions for Health Officers.

MISCELLANEOUS EXAMINATIONS.

Pathological Tissues.—Of 415 specimens of tissue examined, 96 were carcinoma; 16 sarcoma; 7 tuberculosis; 21 were in such condition that satisfactory examination was impossible, and 275 were of various less important lesions.

Autopsies.—Seven post mortem examinations were made by members of the laboratory staff, five by Dr. Simonds, two by Dr. Shimer. Carefully made autopsies with subsequent report on the microscopic examination of the tissues is greatly appreciated by physicians. More such examinations would be made if requested.

Pus.—Of 159 specimens of pus examined, eight contained tubercle bacilli, and one, from the eye, contained gonococci.

Water.—Twenty-eight samples of water were examined.

Cerebro-spinal Fluid.—Of 46 specimens of cerebro-spinal fluid examined, three contained tubercle bacilli (for description of these

cases see under "Tuberculous Meningitis"); three specimens from two patients showed streptococci; four from one patient contained pneumococci; and four from one patient showed a very few intracellular diplococci, probably meningococci. A number of the samples showed a very high percentage of lymphocytes. The remainder either showed nothing especially unusual or were too badly contaminated for satisfactory examination.

Pleural Fluid.—Of 15 specimens of fluid from the pleural cavity, one was found to contain tubercle bacilli. In one pneumococci were found, and from one staphylococcus aureus was cultivated in pure culture.

Urine.—Three hundred sixty-seven samples of urine were examined. Tubercle bacilli were found in ten.

Blood Cultures.—Of eight blood cultures taken at the City Hospital in cases of suspected typhoid fever, five proved positive and three negative. Two blood cultures, one in a case of pneumonia, the other in a case of suspected streptococcus septicemia, showed no growth.

Wassermann Tests.—The attempt to make this test available to the doctors of Indiana has been abandoned. No plan could be devised by which it could be made available for all the physicians in the State with any hope of its being sufficiently reliable to justify the time, labor and expense necessary.

At the request of Dr. F. B. Wynn, of Indianapolis, we secured a small amount of amboceptor and antigen from Mr. L. S. Manly, of Chicago, in order to control with this test the results of the first doses of Salvarsan administered in this city. Blood from seven patients was examined. Of these, two were unsatisfactory and two others were negative. Blood from three patients to whom Salvarsan was given was tested at this laboratory. From one of these patients only one test was made. The other two patients were women whose initial tests were strongly positive. The blood of one of these was found negative (also by Dr. Noguchi, to whom blood was sent for control), on the fourth day after injection; the other continued to be positive for more than two months.

Blood Smears.—Of 122 blood smears, four were from cases of myelogenous leukemia and two from pernicious anemia. The remainder showed nothing noteworthy.

Miscellaneous.—One hundred ninety-four specimens, too miscellaneous in kind for classification, were examined during the year.

AN EPIDEMIC OF DYSENTERY AT TERRE HAUTE.

Between the middle of June and the middle of August, 1911, an epidemic of dysentery occurred in the southeast portion of Terre Haute. The district in which cases occurred extended as far east as Twelfth street and as far north as Franklin avenue. One-half of the cases were between South First street and Prairieton avenue, in Krumbhaar addition. No definite data was secured concerning the exact sanitary conditions in each family in which there was a dysentery patient. In general, however, these families lived in houses with no sewer connections and either not screened at all or only indifferently well screened, used water from wells, and the majority used condensed milk. In the two homes visited on July 27th with Dr. Bohn, flies were present in great numbers, especially in the house that was not screened.

An attempt was made to determine the type of infection and to discover its origin. The bacteriological work was done under great disadvantage because of the impossibility of securing suitable material. The material obtained consisted of contaminated stools from two of Dr. J. C. Bohn's patients, the washings from an agar plate made two days before by Dr. Walker Shell from the stool of one of Dr. C. M. Smick's patients, and intestinal contents obtained at an autopsy on a child already embalmed. In Dr. Shell's material, streptococci were the only pathogenic bacteria found. From one of the other cultures an organism was isolated which corresponded very closely to the Flexner type of *B. dysenteriae*.

From the data secured, the most probable source of the infection appears to have been contaminated food. It seems likely that one or more bacilli carriers in this district furnished the infectious material which was carried by flies and deposited on food. The weather conditions were favorable to the growth of any organism in these poor homes, where ice was probably too much of a luxury to be had in sufficient quantities to properly preserve food. With the myriads of flies which I saw in one of the homes visited, the remarkable thing was not that a child had dysentery, but that the whole family was not affected.

Through the courtesy of Dr. J. C. Bohn, Dr. W. R. Mattox and Dr. C. M. Smick, data concerning 34 cases were secured. Among these there were 12 deaths, 35.5 per cent. All the deaths occurred in children under three years old. (See Table 28.) The only case under one year was fatal. There were 16 cases among children from

one to three years of age, with 11 deaths, 69 per cent. There were 13 cases in children from 4 to 10, and four cases in adults of 25 to 60 years old, none of which were fatal.

TABLE 28.

Age.	CASES.			DEATHS.			Per Cent.
	Male.	Female.	Total.	Male.	Female.	Total.	
Under 1 year.....	1	0	1	1	0	1	100
1 to 3 years.....	7	9	16	5	6	11	69
4 to 10 years.....	4	9	13	0	0	0	0
25 years and up.....	1	3	4	0	0	0	0
Totals.....	13	21	34	6	6	12	35.3

The greatest number of deaths in any one week (4 deaths), occurred during the week of July 2d to 8th, when the temperature for four days in succession ranged from 100° to 103°. The largest number of cases reported in one week was from July 9th to 15th.

• All of the cases showed blood and mucus in the stools. In five cases the blood and mucus appeared on the first day; in 16, on the second; in 10 on the third, and in three on the fourth day. The stools ranged from 3 to 25 per day in number. The temperature ranged from normal to 104°F. Only five cases showed a temperature of 102° or over, and all were fatal. Four fatal cases showed a temperature of 99.5° to 100°, and three fatal cases were said to have had normal temperatures.

The majority of the deaths (8 in number), occurred before the sixth day of the disease; two occurred on the eleventh and twelfth days respectively.

The degree of toxemia varied greatly. In 20 cases with two deaths, it was said to be slight; in 8 cases with 6 deaths, severe or "marked;" in 5 cases with 4 deaths, very severe. "Brain symptoms" or convulsions were present in six cases.

One remarkable feature of the epidemic was the almost uniform absence of tenesmus and abdominal tenderness. In 7 cases, with one death, abdominal tenderness was absent; in 22 cases, with 10 deaths, it was slight; in 3 cases, with 1 death, it was marked. In 6 cases, with no deaths, tenesmus was absent; in 17 cases, with 5 deaths, it was slight; in 7 cases, with 4 deaths, it was severe, and in 3 cases, all fatal, tenesmus was very severe. (See Table 29.)

TABLE 29.

CHARACTER OF SYMPTOM.	ABDOMINAL TENDER- NESS.		TENESMUS.		TOXEMIA.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Absent.....	7	1	6	0	0	0
Slight.....	22	10	17	5	20	2
Severe ("marked").....	3	1	7	4	8	6
Very severe.....	0	0	3	3	5	4

The absence or very slight degree of tenesmus is accounted for by the pathological conditions found in the case which came to autopsy. This was a child 20 months old, who died on the eleventh day of the disease. There was a very high degree of toxemia with very slight abdominal tenderness and tenesmus. The onset in this case was with diarrhoea. Blood appeared in the stools on the second day. The temperature did not range much above normal.

Only the abdominal organs were examined at autopsy. The mesenteric and retroperitoneal glands were the size of beans. The spleen was only slightly enlarged. The small intestine was practically empty. The duodenum and jejunum showed nothing abnormal. Peyer's patches and the solitary lymph nodes of the ileum were somewhat swollen but not ulcerated. Throughout the entire length of the colon there were many very superficial ulcers. These were most numerous in the caecum and descending colon and sigmoid. The rectum was relatively only slightly involved, a fact which accounts for the slight degree of tenesmus.

Microscopically the liver and kidneys showed the normal parenchymatous changes found in severe toxemias, namely, fatty changes in the former and a mild grade of parenchymatous nephritis in the latter, affecting chiefly the convoluted tubules.

This epidemic of diarrheal diseases, though small, teaches several important lessons. In the first place, it directs attention to the very bad sanitary conditions in the part of the city affected. While most of the infections occurred in children, adults did not escape. Newsholme has declared that "infant mortality is the most sensitive index we possess of social welfare and of sanitary administration, especially under urban conditions. A very heavy infant mortality implies a heavier death rate up to five years of age, and right up to adult life the districts suffering from a heavy child mortality have higher death rates than the districts whose infant mortality is low."

On the other hand, this epidemic was probably due almost as much to ignorance and poverty of the parents as to the bad sanitary conditions. People living as these families know little or nothing of ordinary principles of hygiene and still less of the proper hygiene of infancy and childhood. One feature of the epidemic, however, stands out with unusual prominence, namely, that there was only one patient under one year of age. This probably means that the mothers in this district nurse their babies. It was only those children who had been partially or entirely weaned that became infected. These mothers need some instruction in the simple principles of hygiene.

INFANTILE PARALYSIS.

There has been very little opportunity for laboratory work on cases of this disease. The following investigations were made:

One case was seen by Dr. Simonds with Dr. H. G. Bloom of Oxford. This was a clear case of poliomyelitis. Dr. Shimer saw two cases that were probably the abortive type with Dr. C. E. Gould of Rochester.

Several cases of paralysis of unknown origin in domestic animals have been investigated. On August 14, 1911, Dr. Shimer witnessed an autopsy on a cow made at the suggestion of Dr. J. W. Parrish of Shelbyville. The animal belonged to Monsieur Shutt. A case of infantile paralysis existed on a nearby farm. Dr. Shimer's report follows:

"Helfer about 2 years old. Had been sick since March and had been rapidly losing weight. When the cow walked there appeared to be weakness and stiffness in all the leg muscles, but there was no observable paralysis. She easily jumped a three-foot fence without scraping or dragging the hind legs within half an hour of the time she was killed.

"Post-mortem showed the lungs and heart to be normal. The only pathological condition in the abdomen was enlarged mesenteric lymph glands. The superficial lymphatic glands all over the body were enlarged. Among these glands were many large dark-colored ones, which were either hemolymph glands or large glands full of blood, due to some bacterial infection. The surface of the joints of all four legs were apparently normal. No pathological conditions of the muscles of any of the limbs were found. The brain was removed and found normal. Portions of the spinal cord were removed and were found to be normal.

Microscopical examination of Ammon's horn, portions of spinal cord and spleen showed nothing abnormal. The large dark colored lymphatic glands, upon examination, showed them to be normal hemolymph glands."

On August 24, 1911, Dr. H. W. Sigmond sent to the laboratory a chicken affected with a peculiar spastic paralysis (?). There was definite spasm of the muscles of the right side of the neck and body. It would fall on its right side with its head drawn far back to the right. The fowl was received about the middle of the afternoon and was placed in a cage for observation. Next morning it had completely recovered. It was kept under observation for three weeks, remained healthy and gained weight during the entire time, and when killed showed no pathological lesions of any kind.

On August 28, 1911, Dr. Simonds went to Shelbyville at the request of Dr. J. W. Parrish to make post mortem examination of a hog. This animal was one of a litter of ten pigs, six of which had died of some obscure affection within a period of two months. The animal which was examined post mortem began to show symptoms three weeks before it was killed. The onset was with weakness in the hind legs. Later this amounted to partial paralysis with definite atrophy of the ham muscles.

At autopsy no gross lesions of any kind were discoverable in any part of the body. Microscopic sections of the spinal cord showed no lesions of any kind. Pieces of the lumbar region of the spinal cord were sent to Dr. Simon Flexner, of the Rockefeller Institute for Medical Research, to be injected into monkeys. The results of the injection were entirely negative.

The most interesting specimen of a paralyzed animal was a cat sent to the laboratory on September 19, 1911, by Dr. W. H. Sigmond of Crawfordsville. The cat belonged to a family living four or five squares from a home in which there was a case of infantile paralysis. This animal was perfectly well on Monday, September 16th. On the following day it was discovered with its hind legs paralyzed. No evidence of injury could be discovered. The cat was observed at the laboratory until Saturday, September 23d. The paralysis was complete, there was total loss of sensation in the affected limbs and loss of sphincter control. There seemed to be no tendency for the paralysis to extend upwards. The animal was able to drink milk up to the time it was killed. It became exceedingly weak, however, and was hardly able to support itself on its fore legs.

At post mortem the kidneys and liver showed some cloudy swelling; the lungs and heart were normal; no changes were found in the brain; there was no sign of any injury to any of the vertebrae; the cervical and thoracic portion of the spinal cord showed no

gross changes. About two-thirds of the lumbar portion of the cord was intensely hemorrhagic and softer in consistency than elsewhere. This is the only change that could be made out microscopically. There was no blood in the subdural space of the cord.

Microscopic sections of the lumbar region of the cord showed very extensive hemorrhage which involved practically the entire thickness of the cord, but was most severe in the gray matter, especially in the anterior horns. There was no round cell infiltration or other indication of infection. The condition appeared to be simple hemorrhage into the substance of the cord.

Pieces of the lumbar cord sent to Dr. Flexner and injected into monkeys gave negative results, as did also injections into guinea-pigs, made in this laboratory.

OUTFITS.

The number and kinds of outfits sent out each month are shown in Table 30.

TABLE 30.

Showing Number and Kinds of Outfits Sent Out Each Month.

Months.	Sputum Outfits.	Diphtheria Outfits.	Widal Outfits.	Malaria Outfits.	Special Outfits.	Totals.
October, 1910.....	332	839	308	45	75	1,599
November, 1910.....	298	520	121	33	18	990
December, 1910.....	252	244	67	8	28	599
January, 1911.....	244	308	97	24	58	731
February, 1911.....	393	373	104	26	43	939
March, 1911.....	524	230	121	24	65	964
April, 1911.....	575	119	104	24	54	876
May, 1911.....	542	290	188	112	46	1,178
June, 1911.....	333	78	859	13	39	1,322
July, 1911.....	487	100	231	40	65	923
August, 1911.....	375	286	338	16	31	1,046
September, 1911.....	385	924	243	32	34	1,618
Totals.....	4,740	4,311	2,781	397	556	12,785

REPORT
OF THE
CHEMICAL DEPARTMENT
LABORATORY OF HYGIENE

Year Ending September 30, 1911

H. E. BARNARD, B. Sc.,
Chemist in Charge and State Food and Drug Commissioner.

H. E. BISHOP, B. Sc.,
Food Chemist.

J. H. BREWSTER,
Water Chemist.

I. L. MILLER, B. A.,
Drug Chemist.

JAY A. CRAVEN, B. Sc.,
Water Chemist.

JACK J. HINMAN, JR., B. A.,
Assistant Chemist.

JOHN C. DIGGS, B. A.,
Assistant Chemist.

G. CULLEN THOMAS,
Assistant Chemist.

ALBERT R. TUCKER,
Assistant Chemist.

SIXTH ANNUAL REPORT OF THE CHEMICAL DEPARTMENT OF THE LABORATORY OF HYGIENE.

H. E. BARNARD, B. SC.

The Chemical Department of the Laboratory of Hygiene, at the close of its sixth year of successful work, finds its position as an integral and important function of the State Board of Health more fully demonstrated and firmly established than ever before. Sanitary science advances under the guidance of the trained medical officer and skillful chemist. If either branch of the service were hampered the development of public health work would suffer. That Indiana, through its Legislatures, is fully appreciative of this fact, is shown by the hearty support given the Laboratory of Hygiene. As the work has grown increased appropriations have been granted, and the Legislature of 1910-11 was not behind other Legislatures in its appreciation of the value of laboratory control of important sanitary problems, and putting additional money at the service of the department.

This report does not attempt to set out the work accomplished during the year. It tabulates results and analyzes data collected. Its value lies in the reporting of conditions found for the use of the investigator who may wish to compare conditions of the present with those of the past, and of the worker in similar fields who by a study of our results may be able to make his own work more efficient and forceful.

The record of each branch of the laboratory shows more and better work than in other years. The machinery of the department, made up of its chemists, clerks and inspectors, is better co-ordinated and more effectively operated than heretofore. Years of training, of continued application to the same line of work, of familiarity with the laws and the problems which arise under them, of acquaintance with the local conditions, have resulted in this efficiency of service.

The personnel of the department has not greatly changed during the year. John Herbert Brewster, who for three years did efficient work as head of the water laboratory, resigned to accept a more lucrative position. J. A. Craven, B. S., was appointed to fill the

vacancy, and by his close application and intelligent work has proved his ability to make the water laboratory of value to the department.

H. E. Bishop, B. S., has continued his work as food chemist, and associated with him have been John C. Diggs, B. S., who comes to his work as assistant food chemist highly trained and equipped for excellent service, and G. Cullen Thomas, who has continued his work as assistant chemist.

Ivy L. Miller, B. A., has for still another year made the drug laboratory of increased value in the control of the drug supply, and demonstrated the necessity of a well regulated and rigidly inspected drug supply to the physician, the pharmacist and the patient alike.

Albert R. Tucker has served the laboratory for another year as assistant chemist during the summer months, and his efficient work has earned for him an appointment as assistant chemist in the water laboratory.

In pointing out the services which have made the work of the laboratory meritorious, the clerical and stenographic force deserves honorable mention. A department intrusted with the enforcement of laws can operate successfully only when its records are clear and attainable. Miss Edith Hoffman has cared for this branch of the service faithfully and efficiently. Miss Goldine Grove, who for two years was stenographer to the department, resigned in April, and her place has been competently filled by Mrs. Florence Vollrath.

To our chemists and clerks who have continued to serve the State of Indiana, although underpaid in comparison with men doing similar work in the industrial world, is due the hearty support and appreciation of every citizen. It is to be hoped that in the future the worth of the public servant may be as highly appreciated and as liberally remunerated as when similar service is given in fields which have as their purpose the profit of the individual rather than the welfare of the citizens.

The food and drug inspectors appointed shortly after the passage of the Pure Food Law in 1907 have earned special recognition. A. W. Bruner, F. W. Tucker, B. W. Cohn and John Owens, in charge of the work respectively in southern, northern, eastern and western Indiana, have made their influence for law enforcement, the good of business and the welfare of the consumer, increasingly effective. The inspection corps has been enlarged by the addition of John T. Willett of South Bend. Mr. Willett served his city as

food inspector for many years and by his efficient work earned the promotion which came to him with his transference from city to State work. This increase of the number of inspectors made a change in the territory of each man necessary. Mr. Willett has taken up the work of northern Indiana, and Mr. Tucker has been transferred to territory formerly cared for by Mr. Owens and Mr. Cohn.

During the past year special efforts have been made to develop local inspection work under the pure food, drug and sanitary laws. City, county and town health officers are deputy inspectors subordinate to this department. This work is necessarily new to most of them, and because of the small salaries paid these officials, many have not made use of the opportunity given them to improve the condition surrounding the sale and distribution of the food and drug supply. We have endeavored to impress upon the health officer his responsibility as a subordinate of the department and the co-operation which we have secured and which is constantly increasing assures us of the ultimate success of our effort. Already a number of health officers have adopted the plan of work proposed by the department, and taught by its inspectors, and use the official score cards and inspection blanks, and in fact are carrying on the work in their communities just as if they were State inspectors, making inspections, giving instructions, issuing condemnations, collecting samples for analysis, filing evidence and conducting suits for violation of the law. When the more than seven hundred health officers of the State come to appreciate the great value of their work in just such service, we shall have developed a system of sanitary supervision which has never been approached in any State or county, and which for effectiveness and low cost of operation can hardly be equalled.

The Legislature of 1910-11 continued the record of previous years in the enactment of progressive and constructive legislation and passed several important measures which concern the health and welfare of the people, and which are given to this department for enforcement. The enactment of a Cold Storage Law makes it possible through the sanitary inspectors to regulate the holding of food stuffs in cold storage, and to put a stop to the practice, occasionally met with, of holding goods beyond the period during which they should remain in storage. By this legislation the consumer is also given the opportunity to know whether or not his foods have been held in storage. For instance, the sale of cold

storage eggs is only possible when the basket or package at the grocery store is plainly labeled "cold storage," and when the bag in which goods are delivered to the consumer is likewise marked "cold storage."

The value of such legislation is twofold. The consumer knows what he is getting, and will in time learn to appreciate the fact that cold storage is a practical, safe means of conserving the food supply from one season to another, and that goods so handled do not become unfit for food when they are placed in storage in good condition and held so under suitable temperatures for a time not longer than that established as a limit to storage by the law. Furthermore, the practice of putting unfit goods in storage and of withdrawing them in bad condition is prevented by the inspection required and at the same time the hoarding of the food supply and its accumulation for the purpose of influencing the market is made impossible.

The Legislature also enacted a Weights and Measures Law which embodies the valuable features of similar legislation in other States, and which after its taking effect on January 1, 1912, will regulate and control the entire weights and measures system of the State effectively and economically. The State Food and Drug Commissioner is by law made State Commissioner of Weights and Measures. He is charged with the care of the State's standards of weights and measures and has supervisory control of all the work of weights and measures inspection done by city and county officials. The appointment of the inspectors, while still left to local authority, is regulated and safeguarded by the provision that such appointments must be made from an eligible list established by the State Commissioner of Weights and Measures and by the power given him to remove incompetent officials. The State Commissioner is also ordered by the law to issue regulations for the guidance of county and city officials and so to govern the procedure to be followed by them.

Another act in the interest of pure food and the welfare of the purchasing public is that regulating the sale of renovated butter and requiring that all such reworked or process butter be labeled with the words "renovated or process butter."

The regulation of the milk supply, especially as regards its sanitary production and distribution, is everywhere attended with difficulty and the inspection work has not as yet been productive of results. In an endeavor to secure by legislation what it has thus

far been impossible to secure by education, an amendment to Section 2 of the Pure Food Law now provides that milk shall be deemed adulterated if it contains *visible dirt*. No pure food legislation has hitherto gone so far as this simple amendment, and no law for the regulation of the food supply has been so productive of immediate results. It has been possible for us to secure more sanitary improvement at the dairy, and better care of the milk supply by the dairyman under this amendment than we have ever been able to do by following the plan of education universally suggested as the panacea for unclean and adulterated milk.

In earlier reports we have said, "the food problem is no longer a question of adulteration, it has now become a question of sanitation." The work of last year strengthens the force of the statement and to our mind reverses the original conception of the regulation of the food supply. Work in the field, at the place of manufacture, and at the point of distribution, is of first importance. Work at the laboratory in detecting substitutes and makeweights is secondary. One agency supplements the other. In the development of the inspection service we are finding that the scientific department and its laboratories are of very great value to the field inspectors in the handling of problems hitherto not detected by the scientist. So we are calling upon the chemist, the microscopist and the bacteriologist to assist the inspector who is prosecuting the milkman for the sale of milk containing visible dirt, and asking for laboratory evidence of the presence of dirt and its inherent possibility of danger. We are requiring of the chemist that he go to the food manufacturing plant and use his knowledge in installing methods which make for the elimination of dirt and filth, and more satisfactory preparation of the food; that he go to the sewage disposal plant and assist in the purification of the sewage effluent; that he visit the water works and lend his assistance to the solution of the problems of the engineer who is endeavoring to furnish a potable supply from a polluted source.

It will always be necessary to reinforce the inspection service by laboratory control. In States where for years a rigid police supervision has been made of the milk supply, the percentage of skimmed and watered samples continues to be the same as when the work was first started. It is probable that the percentage of samples adulterated by the addition of makeweights and fillers, by the removal of valuable constituents, by the substitution of inferior materials, by the use of artificial colors, glazes, and polishes, will

never be greatly lower than now. If laboratory control were abandoned the amount of fraud along these lines would immediately increase. It is impossible to legislate absolute honesty into business practice. The necessity for rigid laboratory control will always exist, even though we recognize the sanitary phase of food law enforcement as of first importance.

While the food supply originates on every farm and in thousands of small manufacturing plants, the drug supply comes from a few houses which for the most part are well equipped for their work. For this reason the inspector finds little necessity for studying the sanitary condition of the pharmaceutical houses, and the chemist is almost entirely responsible for the enforcement of the pure drug law. Gross adulteration of the drug supply and the former almost universal system of mislabeling is not now in evidence. Most pharmaceuticals are properly labeled and conform to the requirements under which they are made. Such goods need little attention, but there still remains a large class of common drugs which, through carelessness and ignorance, fail to meet required standards. The drug chemist who year in and year out analyzes samples collected from the drug stores of the State, and who finds spirits of camphor and tinctures of iodine and iron no better now than when he first began his work, may sometimes feel that his task is fruitless and that it is impossible to secure compliance with the law, or to so improve these classes of pharmaceuticals that the patient may get results from his dosage. The condition is an illogical one which can only be explained by the dispensing pharmacist. It is not reasonable to expect that the druggists of this State, whom we know to be conscientious, high minded, skilful and for the most part honest servants of the people, are wilfully dispensing these illegal goods, and it is to these men who after a vain search for four years for an explanation, we look for answer.

No cases brought during the past year have been adjudicated by the higher courts. Nearly every case has been filed in the lower courts, usually before a justice of the peace, and the verdict of guilty there rendered accepted by the defendant. In a few instances the defendant has taken an appeal from the lower court to the circuit court of the county, but such procedure is rare and from the standpoint of the defendant expensive and fruitless. The courts of Indiana are too familiar with the work of this department and too appreciative of its value to listen to specious pleas of attorneys or manufactured evidence submitted by defendants. The practice

of the department, uniformly adhered to, is to file no case which is not based upon a palpable violation of the law and in which evidence as to the guilt of the defendant can be clearly and irrefutably demonstrated.

The now famous benzoate of soda suit brought against the State Board of Health and the State Food and Drug Commissioner by the Williams Brothers Company, Detroit, Michigan, and Curtis Brothers Company, Rochester, N. Y., is still pending in the federal court, no decision having been rendered to the federal judge by the master in chancery before whom the evidence as to the facts was heard. Pending a decision the department has continued to enforce the law prohibiting the use of preservatives, and not only has been successful in suppressing the sale of all food stuffs containing benzoate of soda, but it has demonstrated beyond cavil the security of its position in holding that benzoate of soda is wholly unnecessary either to hold goods in the package or to preserve the contents of the package after being opened. Not a manufacturer doing business in the State in the season of 1911 resorted to the use of benzoate of soda in his pack of tomatoes or tomato pulp, and not a complaint has come to the department during the entire year from the druggists who a year or so ago felt it utterly impossible to dispense soda fountain preparations which did not contain a liberal quantity of some antiseptic. The wisdom of the action taken by the State Board of Health in prohibiting the sale of food stuffs containing saccharin, in spite of vigorous opposition and the prosecution of scores of cases in the courts, has been finally demonstrated by a federal ruling which declares saccharin injurious to health and prohibits its use in food stuffs after January 1, 1912.

During the years of 1908-9 and 10, the water laboratory, under the direction of Mr. Herbert Brewster, made extensive studies of the pollution of the lower end of Lake Michigan and of the Calumet River. During the past year a similar study has been made of the Ohio River, or the southern boundary of the State, from Lawrenceburg near the Ohio line to Evansville in its southwest corner. A report of this work, which was conducted along broader lines than any similar sanitary survey, is elsewhere given in full.

The water laboratory has continued to prove its value to health officers and to the owners of individual water supplies, and by more than a thousand analyses has demonstrated the necessity for a complete knowledge of the character of every water supply if the health of the user is to be safeguarded.

RESULTS OF ANALYSES OF FOOD SAMPLES.

During the year 1,608 samples of food collected by inspectors, or sent in by officers, have been analyzed. Of this number, 1,082 samples have been pure, and 526 samples have not conformed to the legal standard of strength, have contained injurious ingredients or have borne misleading labels. This is equivalent to an adulteration of 32.7 per cent. The percentage of adulteration for 1906 was 42.3 per cent.; for 1907, 20.2 per cent.; for 1908, 25.7 per cent.; for 1909, 33.8 per cent., and for 1910, 30.9 per cent. Upon this basis of comparison, no constant improvement in the character of the food supply is noted, but in interpreting this data it should be understood that since the inspectors in the collection of samples have taken up only such articles as were most liable to adulteration or evidently falsely labeled, the percentage of adulteration should not be assumed to be as great as these figures would indicate.

The following summary gives in detail the character and variety of the work done and the results obtained in the analyses:

RESULT OF ANALYSES OF FOOD SAMPLES.

ARTICLES EXAMINED.	Legal.	Illegal.	Total.	Per Cent. Adulterated.
Beverages—				
Beer.....	10	0	10	0.0
Beer—Temperance.....	12	16	28	57.1
Brandy.....	3	6	9	66.6
Cordials—Fruit.....	3	5	8	62.5
Gin.....	1	0	1	0.0
Cider.....	10	24	34	70.6
Whiskey.....	13	5	18	27.7
Soda pops, etc.....	36	22	58	37.9
Wines.....	9	6	15	40.0
Coloring—Vegetable.....	0	1	1	100.0
Baking powder.....	2	0	2	0.0
Butter color.....	2	0	2	0.0
Bread.....	0	1	1	100.0
Candy.....	3	0	3	0.0
Corn starch.....	1	0	1	0.0
Corn meal.....	1	0	1	0.0
Cream of tartar.....	1	0	1	0.0
Coffee.....	0	1	1	100.0
Canning compound.....	3	0	3	0.0
Corn.....	1	0	1	0.0
Cream roll.....	1	0	1	0.0
Flour—				
Buckwheat.....	7	1	8	12.5
Wheat.....	16	6	22	27.2
Fish—				
Cod.....	3	1	4	25.0
Flaked.....	1	0	1	0.0
Seaquads.....	1	0	1	0.0
Flavoring Extracts—				
Almond.....	3	0	3	0.0
Banana.....	0	2	2	100.0
Cinnamon.....	1	1	2	50.0
Cloves.....	1	0	1	20.0
Lemon.....	38	11	49	22.4
Orange.....	3	1	4	25.0
Pineapple.....	0	1	1	100.0

RESULT OF ANALYSES OF FOOD SAMPLES—Continued.

ARTICLES EXAMINED.	Legal.	Illegal.	Total.	Per Cent. Adulterated
Flavoring Extracts—Continued—				
Strawberry.....	0	1	1	100.0
Vanilla.....	37	8	45	17.7
Wintergreen.....	1	0	1	0.0
Fruit Products—				
Canned.....	4	1	5	20.0
Butters and jams.....	13	4	17	23.4
Jellies.....	20	1	21	4.7
Peaches.....	2	1	3	33.3
Honey.....	10	0	10	0.0
Horseshadiah—Prepared.....	2	0	2	0.0
Konut oil.....	1	0	1	0.0
Lentils.....	0	1	1	100.0
Lard.....	19	3	22	13.6
Maple Products—				
Sugar.....	9	4	13	30.7
Syrup.....	19	15	34	44.1
Meat Products—				
Bologna.....	1	1	2	50.0
Chicken tamale.....	1	0	1	0.0
Beef—Dried.....	2	0	2	0.0
Ham.....	1	0	1	0.0
Hamburger.....	2	2	4	50.0
Mutton.....	1	0	1	0.0
Mince meat.....	1	0	1	0.0
Sausage.....	21	3	24	12.5
Weinerwurst.....	0	1	1	100.0
Milk Products—				
Butter.....	36	14	50	28.0
Buttermilk.....	1	0	1	0.0
Cheese.....	7	2	9	22.2
Cream.....	40	28	68	41.1
Ice cream.....	66	22	88	25.0
Milk.....	371	191	562	34.0
Condensed milk.....	5	4	9	44.4
Mother's milk.....	6	0	6	0.0
Oleomargarine.....	2	0	2	0.0
Mince meat pie.....	1	0	1	0.0
Miscellaneous samples.....	11	2	13	15.3
Oyster liquor.....	1	0	1	0.0
Oysters.....	8	1	9	11.1
Oatmeal.....	1	0	1	0.0
Olive oil.....	17	8	25	35.0
Pickle.....	1	3	4	75.0
Pork and beans.....	9	24	33	72.7
Preservative.....	1	0	1	0.0
Salad oil.....	1	4	5	80.0
Scap.....	1	0	1	0.0
Scgar.....	2	0	2	0.0
Sugar butter.....	1	0	1	0.0
Syrups.....	16	4	20	20.0
Spices—Ground—				
Allspice.....	1	0	1	0.0
Cloves.....	2	2	4	50.0
Cinnamon.....	1	0	1	0.0
Ginger.....	1	0	1	0.0
Mustard.....	3	0	3	0.0
Nutmeg.....	1	0	1	0.0
Pepper—Black.....	6	0	6	0.0
Pepper—Cayenne.....	1	0	1	0.0
Tomato Products—				
Catsup.....	10	30	40	75.0
Pulp.....	3	5	8	62.5
Chili sauce.....	0	1	1	100.0
Tomatoes.....	12	0	12	0.0
Soups.....	7	0	7	0.0
Vinegar—				
Cider.....	32	20	52	38.4
Distilled.....	9	4	13	30.7
Vegetables—Canned.....	35	0	35	0.0
Totals.....	1,082	526	1,608	32.7

REPORT FROM THE FOOD LABORATORY.

DAIRY PRODUCTS.

MILK.

Five hundred and sixty-two samples of milk, collected by inspectors of the State Board of Health and by local milk inspectors and health officers, have been analyzed during the year. Of this number, 371 were above standard, both in point of butter fat content and solids not fat, and in being free from visible dirt. One hundred and ninety-one samples, or 34 per cent., were below standard. Of this last number, 158 contained visible dirt. Eliminating from the legal list those adulterated because of the presence of dirt, 6 per cent. of all the samples examined fell below the standards fixed for a normal milk. The results of the year's work show that 28.1 per cent. of all the samples examined were adulterated with visible dirt. From the viewpoint of the chemist, the improvement of the milk supply over previous years is marked; from the viewpoint of the sanitarian and health officer, the condition of the supply is most unsatisfactory. It is to be remembered that the samples collected represent the average character of the milk distributed in our cities and towns, and it is not pleasant for the consumer to learn that more than one sample in four, if the proportion established by last year's work holds in every community, contains hairs, cow dung, street sweepings or other dangerous filth.

The use of preservatives is as uncommon as it was once universal. But three samples collected during the year contained formaldehyde. In every case the dairymen who used the preservative were prosecuted.

The future study of the milk supply will be made from the standpoint of the sanitary inspector. While it is a violation of the law to sell watered or skimmed milk, we are convinced that the consumer will be infinitely more benefited by the rigid enforcement of the "visible dirt" clause than by those paragraphs which establish standards of quality.

MILK ANALYSES BY CITIES AND TOWNS.

LOCALITY.	Total Number Samples.	Number Above Standard.	Number Below Standard.	Per Cent. Below Standard.	Per Cent. Total Solids in Lowest Sample.	Per Cent. Fat in Lowest Sample.	Number Contain- ing Visible Dirt.
Albion.....	1	0	1	100.0			0
Bedford.....	8	5	3	37.5	10.61	1.4	2
Bloomfield.....	1	1	0	0.0			0
Bloomington.....	4	4	0	0.0			0
Brookville.....	2	1	1	50.0			1
Columbus.....	8	4	4	50.0		3.0	4
Connersville.....	6	0	6	100.0			6
Crawfordsville.....	34	26	8	23.2		2.8	7
Danville.....	1	1	0	0.0			0
Elkhart.....	1	1	0	0.0			0
Fairview.....	1	1	0	0.0			0
Franklin.....	2	1	1	50.0			1
Gary.....	17	12	5	29.4	11.8	2.2	2
Geneva.....	1	1	0	0.0			0
Goshen.....	16	11	5	31.3	8.61	2.0	4
Greencastle.....	2	1	1	50.0			0
Greensburg.....	5	5	0	0.0			0
Hammond.....	18	11	7	41.1	11.71	0.1	5
Indianapolis.....	46	29	17	36.9	11.7	2.8	17
Jasper.....	6	4	2	33.3			2
Kewana.....	1	1	0	0.0			0
Kokomo.....	10	10	0	0.0			0
Lafayette.....	11	7	4	44.4	11.56	3.2	3
LaFontaine.....	1	1	0	0.0			0
LaPorte.....	14	9	5	33.7	11.22	2.8	3
Madison.....	28	6	22	78.5	7.32	2.0	20
Michigan City.....	1	1	0	0.0			0
Minawaka.....	13	10	3	23.1			2
Mt. Jackson.....	1	1	0	0.0			0
Muncie.....	24	18	6	25.0	9.98	2.8	5
Nappanee.....	4	4	0	0.0			0
New Albany.....	14	4	10	78.5	8.51	2.8	5
New Castle.....	7	3	4	57.1		.15	3
Peru.....	9	7	2	22.2			2
Plymouth.....	1	0	1	100.0			
Portland.....	4	1	3	75.0		2.7	3
Richmond.....	33	18	15	45.4	11.09	2.8	10
Seymour.....	4	0	4	100.0			4
South Bend.....	154	123	31	20.1	8.17	.25	28
Terre Haute.....	37	18	19	51.4	10.19	1.8	18
Toletson.....	7	7	0	0.0			
Vincennes.....	4	3	1	25.0			1
42 cities.....	562	371	191	34.0			158

MILKS—ILLEGAL.

Lab. No.	Manufacturer or Dealer.	Where Collected.	Per Cent. Fat.	Remarks.
19189		Madison.....	4.3	Sand present.
19190		Madison.....	4.4	Sand and straw present.
19191		Madison.....	4.8	Sand present.
19193		Madison.....	5.0	Sand present.
19194		Madison.....	4.2	Sand present.
19195		Madison.....	5.4	Sand present.
19198		Madison.....	2.0	Low in fat and added water.
19199		Madison.....	4.6	Sand present.
19200		Madison.....	5.9	Sand present.
19201		Madison.....	5.7	Sand present.
19207		Jasper.....	3.7	Sand present.
19208		Jasper.....	6.0	Sand present.
19213	J. H. Clevenger.....	Muncie.....	4.3	Dirt present.
19218	G. B. Deaton & Trent.....	Muncie.....	4.3	Sand present.
19445	Walter S. Rynerson.....	Columbus.....	5.0	Dirt present.
19448	John C. Koehler.....	Columbus.....	4.6	Contained dirt.
19449	Columbus Ice Co.....	Columbus.....	4.3	Contained dirt.
19454	Henry Mundt.....	Columbus.....	3.0	Very dirty.

MILKS—ILLEGAL—Continued.

Lab. No.	Manufacturer or Dealer.	Where Collected.	Per Cent. Fat.	Remarks.
19408	Vincennes Milk Cond. Co.	Vincennes.	3.4	Very dirty.
19514		Gary.	6.8	Sand present.
19556		Gary.	2.4	Below standard.
19557		Gary.	2.2	Below standard.
19611	George McCullough	New Albany.	3.9	Contained dirt.
19613	Chas. H. Miller	New Albany.	2.8	Below standard.
19614	Mrs. Chas. Ferguson	New Albany.	5.7	Very dirty.
19615	Simon Greenfield	New Albany.	4.8	Very dirty.
19619		Gary.	2.6	Below standard.
19757		Crawfordsville.	.....	Formaldehyde present.
19787		Mishawaka.	.....	Formaldehyde present.
19789		Greencastle.	.....	Formaldehyde present.
19826		Crawfordsville.	.....	Formaldehyde present.
19905		Franklin.	3.6	Very dirty.
19963	A. P. Shelter	Goshen.	7.4	Very dirty.
19965	A. C. Foulk & Son.	Goshen.	4.2	Very dirty.
20011	F. M. Ensign	Gary.	4.5	Very dirty.
20013		Muncie.	3.2	Very dirty.
20015		Muncie.	3.0	Very dirty.
20085		New Castle.	3.1	Below standard.
20113	Wm. C. Gray	Crawfordsville.	3.6	Sand present.
20114	Wm. C. Gray	Crawfordsville.	3.6	Very dirty.
20117	W. H. Galey & Galey	Crawfordsville.	3.7	Very dirty.
20118	W. H. Galey & Galey	Crawfordsville.	4.4	Dirt present.
20119	W. H. Galey & Galey	Crawfordsville.	4.0	Very dirty.
20120	Thos. Lynch	Crawfordsville.	2.8	Below standard and adulter.
20135		South Bend.	3.8	Sand present.
20143		South Bend.	3.6	Very dirty.
20144		South Bend.	3.8	Sand present.
20151		Plymouth.	.....	Formaldehyde present.
20215		South Bend.	3.0	26.8% added water.
20216		South Bend.	3.9	Very dirty.
20218		South Bend.	3.4	Sand present.
20220		South Bend.	5.5	Very dirty.
20222		South Bend.	4.0	Sand present.
20223		South Bend.	3.4	Dirt present.
20361		Albion.	4.2	Organic matter present.
20368	Tom Ruse	Kokomo.	4.5	Bottle dirty.
20405		South Bend.	5.1	Dirt present.
20429	W. C. Palmer	Terre Haute.	2.6	Below standard.
20435	L. R. Rockwood	Terre Haute.	4.2	Sand present.
20436	Chas. Newport	Terre Haute.	3.9	Sand present.
20437	Chas. Newport	Terre Haute.	3.9	Sand present.
20438	W. P. Ijamas	Terre Haute.	5.9	Sand present.
20442	Halstead Bros.	Terre Haute.	3.2	Watered and dirty.
20444	Guy Albright	Terre Haute.	3.8	Very dirty.
20445	Guy Albright	Terre Haute.	3.8	Sand and organic matter pres.
20447	Terre Haute Pure Milk Co.	Terre Haute.	1.8	Below standard.
20449	J. S. Lodd	Terre Haute.	3.8	Organic matter present.
20450	J. S. Lodd	Terre Haute.	3.5	Organic matter present.
20451	Dan Holland	Terre Haute.	3.4	Organic matter present.
20453	Fox Sanitary Milk Co.	Terre Haute.	3.6	Organic matter present.
20455	J. W. Smith	Terre Haute.	3.0	Below standard and dirty.
20463	L. R. Rockwood	Terre Haute.	3.5	Organic matter present, dirty.
20467	Henry Stoffers	Terre Haute.	2.6	Below standard.
20468	Henry Stoffers	Terre Haute.	3.4	Organic matter present.
20470	Dan Holland	Terre Haute.	3.4	Dirty.
20493		Hammond.	3.6	Sand present.
20505		Hammond.	3.4	9% added water.
20535	Big Four Dairy	Terre Haute.	21.6	Dirty.
20586	Mrs. Michael Frank	Connersville.	4.2	Dirt and sand present.
20587	H. T. Hackleman	Connersville.	3.8	Dirt and sand present.
20588	C. W. Brown	Connersville.	3.8	Dirt and sand present.
20589	W. K. Stoop	Connersville.	4.9	Dirt and sand present.
20590	Jno. Dorgnes	Connersville.	4.2	Dirt and sand present.
20591	J. W. Daum	Connersville.	4.4	Dirt and sand present.
20648		South Bend.	.....	Sand and organic matter.
20651		South Bend.	4.0	Dirt present.
20654		South Bend.	.....	Sand present.
20754	Guy Albright	Terre Haute.	3.8	Organic matter.
20755	Guy Albright	Terre Haute.	3.9	Dirt present.
20764	Sam'l J. Miller	Indianapolis.	3.6	Dirt present.
20765	Sam'l J. Miller	Indianapolis.	3.6	Dirt present.
20770		Richmond.	3.8	Dirt present.
20772		Richmond.	3.2	Skimmed.
20775		Richmond.	3.2	Skimmed.
20773		Richmond.	3.6	Dirt present.

MILKS—ILLEGAL—Continued.

Lab. No.	Manufacturer or Dealer.	Where Collected.	Per Cent. Fat.	Remarks.
20777		Richmond.	4.0	Sand present.
20778		Richmond.	4.2	Sand present.
20779	John Daniels	Indianapolis.	3.8	Dirt present.
20781	E. F. Eckles	Indianapolis.	4.0	Dirt present.
20782	Union Dairy Co.	Indianapolis.	3.6	Dirt present.
20784	C. C. Topp.	Indianapolis.	2.8	Below standard.
20786	Geo. T. Ryan.	Indianapolis.	4.0	Dirt present.
20788	O. Jessup.	Indianapolis.	3.6	Dirt present.
20793	Fraser Sanitary Milk Co.	Indianapolis.	3.8	Organic matter.
20807	R. McHale.	Indianapolis.	4.1	Dirt present.
20808	Baummann & Son.	Indianapolis.	3.8	Organic matter.
20809	Geo. W. Kinnick	Indianapolis.	3.8	Dirt present.
20810	Johan Poett.	Indianapolis.	3.2	Dirt present, skimmed.
20819	M. W. Hicks.	South Bend.	3.2	Skimmed.
20826	Jermom Sholly.	South Bend.	5.0	Dirt present.
20828	H. E. Wischnmeyer.	Indianapolis.	2.8	Below standard and dirty.
20836	J. C. Wiggam.	Indianapolis.	3.8	Dirt present.
20843	Hoover & Huggler.	Indianapolis.	3.8	Organic matter.
20853	Chas. M. Clerk.	Indianapolis.		Organic matter, dirty.
20861		Mishawaka.	4.8	Organic matter, dirty.
20882		Mishawaka.	5.2	Dirt present.
20905	Casper Wahlg.	Peru.	4.0	Sand present.
20911	Richard Wilson.	Peru.	4.1	Organic matter.
20928		Richmond.	5.2	Sand present.
20929		Richmond.	3.2	Below standard.
20930		Richmond.	4.9	Sand present.
20936		South Bend.	13.5	Dirt present.
20944		South Bend.	4.4	Dirt present.
20951	V. W. Jones.	Muncie.	4.5	Dirt present.
20953	S. L. Irvin.	Muncie.	2.8	Skimmed and watered.
20974	H. Staley.	Goshen.	3.5	Dirt present.
20975	Ira B. Marshall.	Goshen.	2.0	Skimmed and dirty.
20977	Ed Yeager.	Goshen.	2.8	Skimmed.
20989		South Bend.	4.0	Dirt present.
20995		South Bend.	3.2	Skimmed.
20998		South Bend.	4.4	Very dirty.
21017		Bedford.	3.7	Very dirty.
21011		Bedford.	1.4	Skimmed.
21015		Bedford.	4.0	Dirt present.
21020		Madison.	7.0	Sand present.
21022		Madison.	3.2	Below standard.
21023		Madison.	3.4	Sand present.
21024		Madison.	2.2	Skimmed and dirty.
21025		Madison.	4.2	Sand present.
21026		Madison.	4.3	Very dirty.
21027		Madison.	4.1	Very dirty.
21028		Madison.	4.7	Sand present.
21029		Madison.	3.5	Dirt present.
21031		Madison.	3.6	Dirt present.
21032		Madison.	4.4	Sand present.
21033		Madison.	5.8	Dirt present.
21040	C. M. Gorman.	New Castle.	3.8	Dirt present.
21044	Irvin Lacy.	New Castle.	3.7	Dirt present.
21045	F. M. Hamilton.	New Castle.	4.8	Dirt present.
21062		Seymour.	3.4	Dirt present.
21053		Seymour.	4.1	Very dirty.
21064		Seymour.	4.7	Sample dirty.
21055		Seymour.	4.5	Very dirty.
21069	Chas. Pitts.	Richmond.	3.0	Skimmed.
21070	C. Ratliff.	Richmond.	2.8	Skimmed, watered and dirty.
21071	Wm. Hartman.	Richmond.	3.5	Dirt present.
21074	B. Weiss.	Richmond.	3.0	Skimmed.
21076	H. Hodgins.	Richmond.	3.0	Skimmed.
21080	Wm. Nieworhner.	Richmond.	3.4	Very dirty.
21091	Halsmer & Son.	Lafayette.	3.3	Solids below standard.
21096	Frank Hathe.	Lafayette.	3.4	Dirt present.
21097	J. M. Kull.	Lafayette.	3.2	Below standard.
21098	Earl Lahr.	Lafayette.	3.9	Dirt present.
21099	Hatke Bros.	Lafayette.	4.0	Dirt present.
21104	Wm. Smiester.	Brookville.	3.7	Very dirty.
21115	Thos. C. Frey.	New Albany.	3.6	Dirt present.
21116	Wm. Goergel.	New Albany.	4.4	Dirt present.
21117	John Peyton.	New Albany.	3.7	Very dirty.
21118	Fred Zurschmied.	New Albany.	3.2	Below standard and watered.
21119	Frank E. Jolissanint.	New Albany.	4.7	Very dirty.
21125	W. B. Bruebeck & Son.	New Albany.	4.3	Dirt present.
21168		Hammond.	3.5	Dirt present.

MILKS—ILLEGAL—Continued.

Lab. No.	Manufacturer or Dealer.	Where Collected.	Per Cent. Fat.	Remarks.
21169		Hammond	3.8	Dirt present.
21170		Hammond	4.2	Dirt present.
21171		Hammond	0.1	Below standard, dirty, watered.
21246		South Bend	3.4	Dirt present.
21247		South Bend	3.4	Dirt present.
21248		South Bend	3.8	Dirt present.
21250		South Bend	4.4	Dirt present.
21255		South Bend	4.4	Dirt present.
21266	Albert Rebbolts	Laporte	3.8	Dirt present.
21268	C. Heatherson	Laporte	3.5	Dirt present.
21274	S. A. Thomas & Bros.	Laporte	3.3	Added water.
21275	Albert Decker	Laporte	5.2	Dirt present.
21277	P. H. Hardy	Laporte	2.8	Skimmed, below standard.
21309		South Bend	1.6	Skimmed and added water.
21312		South Bend	4.6	Dirt present.
21313		South Bend	4.4	Dirt present.
21316		South Bend	9.0	Dirt and hair present.
21317		South Bend	3.7	Dirt present.
21321		South Bend	4.8	Dirty.

CREAM.

Sixty-eight samples of cream were analyzed, of which 40 were legal, and 28, or 41.1 per cent., were illegal. Eighteen of the illegal samples were so listed because their butter fat content was below 18 per cent. One sample contained but 6.6 per cent. of butter fat; another 9.2 per cent. Ten samples were classed as illegal because they were dirty. Four of the creams which were low in fat were also dirty. It seems impossible that cream samples should be as dirty as some of these inspected. Since most of the "visible dirt" goes to the bottom of the receptacle, the only explanation of the fact must be the use of dirty bottles.

CREAM—LEGAL.

Lab. No.	Manufacturer or Dealer.	Where Collected.	Per Cent. Fat.	Remarks.
19382	John Shrader	Greensburg	25.6	
19388	Josephine Venpool	Greensburg	31.6	
19581	Mrs. L. D. Gwynn	Montpelier	32.0	
19781	Columbia Grocery Co.	Indianapolis	18.2	
19846	John F. Speith	Jeffersonville		No preservative.
19854		Crawfordsville		No preservative.
19855		Crawfordsville		No preservative.
19964	Joe Weaver	Goshen	22.4	
20145	N. Y. Candy Kitchen	South Bend	36.6	
20185	S. J. Houston	Moore Hill		No preservative.
20186	S. J. Houston	Moore Hill		No preservative.
20409	Philadelphia	South Bend	42.2	
20441	Halstead Bros.	Terre Haute	22.8	
20443	J. T. Whiteston	Terre Haute	19.2	
20460	M. W. Denebie	Terre Haute	20.6	
20465	J. H. Long	Terre Haute	20.0	
20469	John Coultrin	Terre Haute	20.0	
20497	Chas. Nemits	Hammond	18.0	
20498	Wm. Fochte	Hammond	18.4	

CREAM—LEGAL—Continued.

Lab. No.	Manufacturer or Dealer.	Where Collected.	Per Cent. Fat.	Remarks.
20524	E. M. Hunt	Monrovia	41.6	No preservative.
20552	Blue Valley Creamery	Indianapolis	60.0	
20668	Pittsford Purity Ice Co.	Indianapolis		
20665	The Philadelphia	South Bend	30.0	
20679	The Philadelphia	South Bend	40.4	
20768		Richmond	28.0	
20794	Fraser Sanitary Milk Co.	Indianapolis	18.0	
20830	Elbert Day	Indianapolis	19.2	
20837	J. C. Wiggam	Indianapolis	23.2	
20838	Geo. A. Topp	Indianapolis	19.4	
20842	Polks Sanitary Milk Co.	Indianapolis	25.0	
20860	Henry M. Walters	Indianapolis	18.8	
20952	V. W. Jones	Muncie	18.0	
20967	S. L. Irwin	Muncie	23.6	
21010	E. E. Ramey	Muncie	24.5	
21012	C. Snyder & Son	Crawfordsville	20.2	
21019		Bedford	18.0	
21042	Davis & Wiggam	New Castle	19.2	
21093	B. Metzger	Lafayette	19.4	
21146	C. L. Benedict	Indianapolis	18.8	
21146	C. L. Benedict	Indianapolis	19.0	

CREAM—ILLEGAL.

Lab. No.	Manufacturer or Dealer.	Where Collected.	Per Cent. Fat.	Remarks.
19446	Walter S. Rydearson	Columbus	21.6	Dirty.
19499	Vincennes Milk Cond. Co.	Vincennes	17.2	Below standard.
19507		Kokomo	6.6	Below standard.
19607	C. W. Brubeck	New Albany	13.6	Below standard and dirty.
20367	Sanitary Milk & Ice Cream Co.	Kokomo	17.8	Below standard.
20434	L. R. Rockwood	Terre Haute	19.2	Dirty.
20439	T. A. Goodwin	Terre Haute	14.0	Below standard.
20456	J. W. Smith	Terre Haute	9.2	Below standard and dirty.
20462	L. R. Rockwood	Terre Haute	16.6	Below standard.
20.33	J. W. Smith	Terre Haute	15.2	Below standard.
20785	C. C. Topp	Indianapolis	12.4	Below standard and dirty.
20787	Geo. T. Ryan	Indianapolis	16.2	Below standard.
20789	O. Jessup	Indianapolis	23.4	Dirty, organic matter.
20791	Wm. Clark	Indianapolis	23.4	Dirty, organic matter.
20833	Chas. Wright	Indianapolis	17.2	Below standard.
20835	Wm. H. Roberts	Indianapolis	14.8	Below standard.
20852	Wm. M. Ball	Indianapolis	14.0	Below standard.
20854	Chas. M. Clerk	Indianapolis		Dirty, organic matter.
20889		Clermont	16.4	Below standard.
20890		Clermont	16.4	Below standard.
20916	C. E. Kees	Peru	18.8	Dirty.
20963	F. H. Kees	Muncie	16.8	Below standard.
20964	J. W. Huling	Muncie	17.2	Below standard.
21021	Thos. Lynch	Crawfordsville	16.6	Below standard and dirty.
21022	Thos. Lynch	Crawfordsville	18.0	Dirty.
21024	W. D. Armentrout	Crawfordsville	21.6	Dirty.
21101	Sanitary Milk Co.	Lafayette	22.8	Dirty.
21144		Indianapolis	14.0	Below standard.

BUTTER.

Fifty samples of butter were analyzed, of which 36 were legal, and 14, or 28 per cent., were illegal. Many of the samples were sent in by health officers who wished to determine whether or not the samples submitted, which were sold as butter, were in violation

of the law. For the most part oleomargarine is now sold for what it is, and the good repute which it enjoys should be sufficient to compel its sale in conformity to law. One of the most striking evidences of the tendency to law violation is shown by an Indianapolis dealer who, after three prosecutions and convictions for selling oleomargarine as country butter, still continues to sell the substitute when the genuine article is asked for.

Country butter is still of very unsatisfactory quality. One sample of country butter contained 39.2 per cent. of water, or three times as much as should normally be present. A statement made in an earlier report that country butter is for the most part a poor product, still holds. The farm dairy does not produce an article which is uniform in character or flavor and it too frequently contains far more moisture than either State or Federal laws tolerate.

BUTTER—LEGAL.

Lab. No.	Retailer.	Collected.	Butyro at 40°C.	Reichert Meissl Number.	Moisture, Per Cent.
19271		Lafayette	42.2	30.3	....
19491		Hammond	42.5	23.63	7.4
19538		Terre Haute	40.8	23.59	11.3
19661		Hammond	41.8	26.37	13.6
19664			41.4	22.38	15.9
19665	H. B. Baker		41.2	27.13	11.5
19711	Prevo Bros	Hammond	41.4	21.46	9.62
19731		Kendallville	40.5	26.8	11.1
19742	Benedicts	Indianapolis	42.55	28.8	12.9
19896	Blue Valley Creamery	Indianapolis	41.6	27.11	14.6
19939	H. C. Leeson	Indianapolis	41.7	26.18	10.24
19940	Oscar Jay	Goshen	41.4	23.8	14.78
20065		Whitestown	43.0	25.47	12.54
20086	Coal City Meat Co	Coal City	42.6	23.45	10.39
20093	H. H. Pearcy	Martinsville	42.65	27.23	11.51
20148		Terre Haute	42.2	29.4	12.7
20190	Boyer & Greiner	Elkhart	42.0	27.76	15.93
20191	Lusher Bros	Elkhart	42.4	27.29	12.19
20198	Cavanaugh & Pollard	Elkhart	43.2	28.04	12.19
20200	Robbins & Swinehart	Elkhart	43.0	27.39	11.37
20205	Golden & Gamberling	Elkhart	40.7	27.34	10.32
20269	J. W. Egnor	Spencer	42.8	24.4	12.44
20270	J. R. Green	Spencer	42.3	27.39	10.98
20359	Mrs. L. H. Stone	Indianapolis	42.3	27.5	9.059
20363	John J. Wilson	Terre Haute	43.1	24.32	12.37
20457	Nuf Ced Co	Terre Haute	43.6	24.39	12.33
20458	B. O. Porter	Spencer	44.0	22.07	12.19
20472	Root Dry Good Co	Terre Haute	42.7	27.23	11.72
20537	Nuf Ced Co	Terre Haute	42.4	27.4	15.25
20549	Mr. Galloway	Indianapolis			Foam test—much foam.
20554			42.7	27.12	15.16
20557	B. O. Porter	Spencer	43.9	24.7	13.50
20592	Mrs. E. Friedman	Indianapolis	42.5	27.5	10.50
21037		Indianapolis	49.7		13.23 Sold as oleo.
21038		Indianapolis	52.3		16.80 Sold as oleo.

BUTTER—ILLEGAL.

Lab. No.	Retailer.	Collected.	Butyro at 40°C.	Reichert-Meissl Number.	Moisture.	Remarks.
19186		Indianapolis	50.5			Colored with annatto. Is oleomargarine.
19187		Indianapolis	50.5			Sample is oleomargarine.
19606		Hammond	48.4	3.49	13.1	Is oleomargarine.
19690		Marion	51.5	0.975		Oleomargarine.
19625	Ella Russel	Indianapolis	49.3	1.3		Oleomargarine.
19662		Hammond	41.9	24.82	22.93	Too high in moisture.
19642	Ella Russel	Indianapolis	49.6	0.92	18.6	Excess moisture and oleomargarine.
19663		Jeffersonville	41.3		39.2	Too high in moisture.
19666	Ella Russel	Indianapolis	49.7	3.93	23.6	Oleomargarine.
19722	Frank Phillips	Hammond	40.5	24.15	17.45	Excess moisture.
19723	Prevo Bros.	Hammond	50.3	0.736	15.74	Oleomargarine.
19679		Whitestown	42.0	3.64	9.02	Oleomargarine.
20187	Elkhart Produce Co.	Elkhart	50.3	4.08	12.91	Oleomargarine.
20196	Elkhart Produce Co.	Elkhart	51.6	1.62	15.8	Oleomargarine.

CHEESE.

Of the nine samples of cheese analyzed, two were classed as illegal because of the presence of borax as a preservative.

For the most part cheese is sold for what it is. Occasional samples show a low butter fat content, and the presence of preservatives.

CHEESE—LEGAL.

Lab. No.	Manufacturer or Retailer.	Per Cent. Fat.	Borax.
20387	B. Chaney, Coal City	45.64	
20388	Coal City Mercantile Co., Coal City	47.21	
20641	Harvey W. Morris, Edwardport	37.84	
20606	F. E. Painter, Indianapolis		None.
21128	Harry Russell, Tipton	40.2	None.
21133	S. J. Paffey, Wabash	28.5	
21140	McNarney & Bros., Wabash	38.4	

CHEESE—ILLEGAL.

19171			Present.
19326			Present.

CONDENSED MILK.

Nine samples of condensed milk were analyzed, of which four contained less than the required amount of butter fat. The manufacture of condensed and evaporated milks has now been reduced to a scientific basis, and the product is for the most part uniform in character and quality.

CONDENSED MILK—LEGAL.

Lab. No.	Manufacturer or Retailer.	Where Collected.	Fat Per Cent.	Solids Per Cent.	Ash Per Cent.	Fat Solids Ratio.	Remarks.
18504	Joe Bender.....	Cambridge City.	.1	.....	.....	.....	Sold as condensed skimmed.
19540	Goshen Creamery Co.	Goshen.....	9.4	.....	.....	.....	Legal.
18924	Riverside Milk Condensery.....	Vera Cruz.....	4.05	.....	.....	.....	Sold as condensed skimmed.
20228	Ko-We-Ba.....	Indianapolis.....	8.0	.....	.....	.....	Legal.
20485	J. L. Turner Co.....	South Bend.....	8.0	.....	.....	.....	Legal.

CONDENSED MILK—ILLEGAL.

18524	.....	Cambridge City.	5.0	.....	.....	.....	Below standard.
19076	Brookmeyer & Son....	Goshen.....	7.2	24.48	.....	.....	Low in fat.
19291	.....	Vera Cruz.....	3.3	.....	.....	.....	Low in fat.
20229	.....	Morristown.....	3.8	.....	.....	.....	Low in fat.

* MOTHER'S MILK.

The analysis of mother's milk is not a part of the work of the pure food laboratory. Occasional samples, however, have been analyzed at the request of physicians and the results obtained are herewith reported.

MOTHER'S MILK.

Lab. No.	Sent in by	Per Cent. Fat.	Per Cent. Protein. Nx 6.25.
19535	Dr. C. N. Combs, Terre Haute.....	2.6	1.77*
19667	Dr. E. Van Reed, Lafayette.....	2.32	1.48
19732	Mrs. M. S. Thomas, Indianapolis.....	4.4	1.29
20130	Mr. Clayton, Indianapolis.....	1.5	1.24
20578	Dr. Shimer, Indianapolis.....	4.0	2.03
21243	Dr. Buehler, Indianapolis.....	8.2	1.89

*Proteids Nx 6.38 per cent.

ICE CREAM.

Eighty-eight samples of ice cream were analyzed during the year, of which 66 were legal and 22, or 25 per cent., were illegal. The ice cream classed as illegal usually contained less than the required 8 per cent. of butter fat. One sample contained much visible dirt. Two samples were colored in imitation of strawberry ice cream and were sold as the pure fruit product. The practice of selling low grade ice cream is still far too common, and is apparently indulged in by dealers who, knowing the law, choose to run the risk of detection in the hope of making an unfair profit.

ICE CREAM—LEGAL.

Lab. No.	Manufacturer or Retailer.	Where Collected.	Per Cent Fat.
19383	Fred Nordmeyer	Greensburg	8.0
19385	Greek Candy Kitchen	Greensburg	9.2
19386	Greek Candy Kitchen	Indianapolis	8.2
19387	Greek Candy Kitchen	Greensburg	9.4
19389	Frank Kabey	Greensburg	11.6
19452	John W. Rubannack	Columbus	8.2
19453	James Demas	Columbus	15.4
19456	Greek Candy Store	Columbus	15.4
19497	Vincennes Milk Condensing Co	Vincennes	8.0
19500	Greek Candy Kitchen	Vincennes	11.2
19501	W. W. Cassell	Vincennes	11.6
19508	John S. Haffen	New Albany	8.8
19509	George Goodhub	New Albany	8.2
19516	McDonald-Stockdell & Co.	New Albany	10.0
19517	E. J. Canter	New Albany	10.0
20311	Ballards	Indianapolis	9.4
20312	Furnace	Indianapolis	9.4
20313	Indianapolis Creamery Co.	Indianapolis	10.0
20425	W. B. Hollingsworth	South Bend	8.8
20473	Jno. W. Wittner	South Bend	8.2
20474		South Bend	14.2
20475	New York Candy Kitchen	South Bend	14.4
20476	Jno. R. Noble	South Bend	9.6
20477	The Philadelphia	South Bend	12.0
20478	O. Mennucci	South Bend	12.0
20479	J. L. Turner	South Bend	10.8
20499	Banbeck & Co.	Hammond	8.4
20501	J. E. Aubry	Hammond	8.4
20502	Paul Scatena & Co.	Hammond	9.6
20503	Jno. J. Kennedy	Hammond	8.8
20504	Stragis & Co.	Hammond	9.8
20537	Jacob Friedman	Hammond	No preservative.
20579	The Philadelphia	South Bend	11.2
20757	J. W. Harkness	Terre Haute	10.0
20758	W. H. Sage & Co.	Terre Haute	8.0
20759	W. H. Sage & Co.	Terre Haute	12.8
20762	Terre Haute Pure Milk & Ice Cream Co.	Terre Haute	9.2
20763	H. L. Conter	Decatur	8.0
20766		Richmond	8.0
20767		Richmond	8.2
20769		Richmond	8.6
20771		Richmond	8.4
20886	L. J. Solaris	Mishawaka	9.6
20887	Purity Shop	Mishawaka	11.6
20888	Peter Rossi	Mishawaka	8.0
20904	C. Rees	Peru	9.2
20908	Sam Porter	Peru	8.0
20909	W. F. Emmeyer	Peru	8.4
20931	Chas. McPherson	Richmond	10.4
20932	O. Nixon	Richmond	10.8
20933	Chas. Price	Richmond	12.0
20934	Greek Candy Co.	Richmond	14.4
20973	Goshen Milk Condenser Co.	Goshen	8.8
20976	Polesoes & Co.	Goshen	8.8
20979	A. R. Beck	Goshen	11.4
20999	W. B. Hollingsworth	South Bend	8.4
21000	John R. Noble	South Bend	11.0
21001	O. Mennucci	South Bend	9.0
21002	J. L. Turner Co.	South Bend	12.8
21041	W. J. Salman	New Castle	10.4
21124	P. J. Pfeiffer	New Albany	11.5
21257	South Bend Sanitary Milk Co.	South Bend	8.8
21250	J. W. Wittner	South Bend	8.0
21222	Jno. Coehoety	South Bend	12.8
20676	J. Ciro	South Bend	9.0

ICE CREAM—ILLEGAL.

Lab. No.	Manufacturer or Retailer.	Where Collected.	Per Cent. Fat.	Remarks.
19381	John G. Tollinger.....	Greensburg.....	6.6	Below standard.
19451	Columbus Ice Cream Co.....	Columbus.....	6.2	Below standard.
19455	Henry Mundt.....	Columbus.....	7.4	Below standard.
19606	P. J. Pfeffer.....	New Albany.....	7.6	Below standard.
20235	.....	Indianapolis.....	7.4	Below standard.
20674	.....	South Bend.....	9.2	Illegally colored.
20677	.....	South Bend.....	7.6	Below standard.
20678	.....	South Bend.....	14.0	Illegally colored.
20710	Gioe Bendetto.....	Indianapolis.....	5.0	Below standard.
20749	Averitt-Dorsey Drug Co.....	Terre Haute.....	6.8	Below standard.
20752	Model Ice Cream Co.....	Terre Haute.....	5.0	Below standard.
20753	Model Ice Cream Co.....	Terre Haute.....	Trace.	Below standard.
20948	.....	South Bend.....	6.0	Below standard and dirty.
20956	E. E. Ramey.....	Muncie.....	6.0	Below standard.
21120	Chas. A. Norwood.....	New Albany.....	7.6	Below standard.
21122	McDonald-Stockdell Co.....	New Albany.....	6.8	Below standard.
21123	Geo. Demas.....	New Albany.....	6.4	Below standard.
21126	Burd & Stratton.....	New Albany.....	10.2	Much visible dirt.
21223	.....	Columbus.....	7.6	Below standard.
21224	.....	Columbus.....	7.0	Below standard.
21500	.....	Brasil.....	4.4	Below standard.
21508	.....	Brasil.....	4.9	Below standard.

FLAVORING EXTRACTS.

LEMON.

Thirty-eight of the 49 lemon extracts examined were legal and properly labeled. Eleven were classed as illegal, in seven cases because of the presence of only a trace of lemon oil. Two samples which contained the required amount of lemon oil were artificially colored, and extracts, otherwise good, entered the illegal class.

LEMON EXTRACT—LEGAL.

Lab. No.	Manufacturer or Retailer.	Where Collected.	Polarisation 200 mm. Tubes.	Per Cent. Oil by Vol.	Specific Gravity 20°C.	Alcohol Per Cent. by Vol.	Color.
*17043	Frank Wilkie.	Worthington.	3.4	1.06	.....	.....	None.
*18864	Mrs. P. Peybry.	Hammond	2.4	5.75	.....	13.0	Natural.
19001	Dangler Tea & Coffee Shop.	Gothen.	18.2	5.68	.....	89.1	Natural.
19089	Chas. Kramer.	Logansport.	18.0	5.63	.....	91.6	Natural.
19090	Chas. Kramer.	Logansport.	17.8	5.66	.....	91.4	Natural.
19172	Sent in from.	Indianapolis	18.4	5.75	.....	85.8	None.
19251	A. W. Osterhage	Terre Haute	17.6	5.5	.....	87.7	Natural.
19275	Smith & Huffman.	North Manchester	.....	6.1	.....	86.2	Natural.
19276	Smith & Huffman.	North Manchester	.....	6.0	.....	86.0	Natural.
19286	Link Scott.	Peru.	.....	5.8	.....	84.8	Natural.
19299	Willard Burrows.	Galveston	.....	5.5	.....	84.5	Natural.
19303	Erny & Kapp.	Galveston	.....	5.3	.....	87.3	None.
19431	B. Chaney	Walton	17.8	5.56	.....	83.88	Natural.
19432	B. Chaney	Coal City	16.4	5.12	.....	81.4	Natural.
19461	Wm. H. Block Co.	Coal City	30.2	9.43	.....	80.5	Natural.
19462	Wm. H. Block Co.	Indianapolis	30.2	9.43	.....	81.3	Natural.
*19603	Wm. Kreitzer	Indianapolis	30.2	9.43	.....	81.1	Natural.
19719	Humphrey Bros.	New Albany	2.8	0.87	.....	9773	Artificially.
19734	Evans & Jackson.	Hammond	17.2	5.37	.....	84.80	Natural.
19773	P. D. Burgeimer, N	Warsaw	20.6	6.4	.....	81.72	Colorless.
19796	J. W. Cliner	Nippawee	17.8	5.5	.....	80.6	Colorless.
19797	J. W. Cliner	Macy	19.6	6.1	.....	79.0	Colorless.
20035	John Kintele.	Indianapolis	18.0	5.6	.....	81.5	Colorless.
20276	Chas. Leitch & Co.	Indianapolis	19.2	6.00	.....	83.90	Colorless.
20325	Will Hayes	Evansville	17.6	5.5	.....	83.25	Colorless.
20349	D. Beck	Noblesville.	18.0	5.6	.....	89.3	Natural.
20421	D. E. Small	Cicero	16.8	5.3	.....	84.58	Natural.
20422	C. Sullivan	Kokomo	18.5	5.8	.....	84.8	None.
20526	B. F. Timmons & Son.	Kokomo	19.0	5.9	.....	83.50	Colorless.
20543	F. Havens	Anderson.	18.0	5.6	.....	82.19	Colorless.
20600	D. H. Badger	Greenfield	19.0	5.9	.....	81.43	Colorless.
20632	S. S. Kresge	Indianapolis	19.8	6.2	.....	83.85	Colorless.
20728	H. K. Bussey	Indianapolis	17.4	5.4	.....	84.57	Natural.
20797	J. H. Madden	Indianapolis	17.6	5.5	.....	85.13	Natural.
21130	Wm. Pratt	Indianapolis	20.6	6.4	.....	82.91	Natural.
21149	Emil Mueller.	Indianapolis	19.2	6.0	.....	83.85	Natural.
21182	Spangler & Jones	Sharpsville	16.0	5.0	.....	82.40	Colorless.
21201	August Snider	Camden	20.8	6.5	.....	82.03	Natural.
		Logansport.	20.8	6.5	.....	87.2	Natural.
		Logansport.	20.8	6.5	.....	77.3	Natural.

*Property labelled.

LEMON EXTRACTS—ILLEGAL.

Lab No.	Manufacturer or Retailer.	Polarisation 200 mm Tube.	%Oil by Vol.	Specific Gravity 20° C.	Alc. % by Vol.	Color.
19297	T. J. Pietsch, Lucerne.....		0.0	.9583	33.0	Artificial.
19466	Frank M. Hall, Youngstown.....	1.0	0.31	.9207	54.3	Natural.
19806	C. T. Rayer, LaFontaine.....	14.1	4.5	.8424	81.4	Artificial.
20087	Sent in from Ft. Wayne.....	13.2	4.12	.8370	84.2	Artificial.
20377	Henry Haas, Riley.....	16.8	5.3	.8457	80.3	Artificial.
20662	J. E. Davis, Winchester.....	0.6	0.2	.9410	44.0	Vegetable.
20798	J. H. Madden, Indianapolis.....	13.0	0.0	.9848	9.8	Artificial.
21000	Leszowski, South Bend.....	9.0		.9500	35.8	Doubtful.
21001	Frank Lasso, South Bend.....	19.0	5.93	.8420	81.8	Artificial.
21066	C. H. Sudhoff, Richmond.....	0.6	0.2	.9379	45.7	Very slight.
21083	Jno. McCaffrey, Frankfort.....	0.4	0.1	.9573	33.6	Coal tar.

VANILLA EXTRACTS.

Thirty-seven of the 45 vanilla extracts analyzed were legal. Eight samples contained artificial vanillin, or coumarin, or were otherwise compounded and not entitled to the name of vanilla extract. For the most part vanilla extracts are now properly labeled and manufactured.

VANILLA EXTRACT—LEGAL.

Lab. No.	Manufacturer or Retailer.	Vanillin.	Normal Lead Number.	Coumarin.	Precipitate in Dialcoholised Extract.	Caramel.	Lead Sub-acetate Precipitate.
*17044	Frank Wilkie, Worthington.....	1.332	1.090	0.076	Yes.....	Yes.....	Very heavy.
18980	L. S. Kowski, South Bend.....	.....	519	0.0	Yes.....	None.....	None.
19087	Chas. Kramer, Logansport.....	.....	494	0.0	Yes.....	None.....	Very heavy.
19000	Danlgers Tea & Coffee Co., Goshen.....	0.302	912	0.0	Yes.....	None.....	None.
19088	Chas. Kramer, Logansport.....	.....	494	0.0	Yes.....	None.....	Very heavy.
19113	Sent in from South Bend.....	0.242	870	0.0	Yes.....	None.....	Very heavy.
19173	Sent in from Indianapolis.....	.....	832	0.0	Yes.....	None.....	Very heavy.
19273	Smith & Huffman, North Manchester.....	.....	375	.....	Yes.....	None.....	Heavy.
19287	Link Scott, Peru.....	276	430	.....	Yes.....	None.....	Heavy.
19298	Willard Burrows, Calveston.....	298	547	.....	Yes.....	None.....	Heavy.
18302	Erny & Kapp, Walton.....	176	445	None.....	Yes.....	None.....	Heavy.
19349	C. W. Zobbe, Indianapolis.....	159	424	None.....	Yes.....	None.....	Heavy.
19406	Ott & Davis, Covington.....	164	471	.....	Yes.....	None.....	Heavy.
19427	Coal City Mercantile Co., Coal City.....	198	303	.....	Yes.....	None.....	Heavy.
*19467	Frank M. Hall, Youngstown.....	467	088	002	None.....	Present.....	Light.
19559	Wm. H. Block Co., Indianapolis.....	222	500	None.....	Yes.....	None.....	Heavy.
19720	Humphre Bros., Hammond.....	09	465	None.....	Yes.....	None.....	Medium.
19774	P. D. Burgamer, Nappanee.....	21	668	None.....	Yes.....	None.....	Heavy.
19798	J. W. Climer, Macy.....	19	291	None.....	Yes.....	None.....	Medium.
19836	Sent in from Wabash.....	0.28	808	0.0	Yes.....	None.....	Very heavy.
20034	Jno. Kintzle, Michigan City.....	0.17	453	None.....	Yes.....	None.....	Heavy.
*20036	G. H. Kunitz, Michigan City.....	0.23	314	016	None.....	Present.....	Medium.
20322	H. G. Deck, Noblesville.....	0.20	667	None.....	Yes.....	None.....	Heavy.
*20326	Will Hayes, Noblesville.....	0.185	559	None.....	Large.....	None.....	Heavy.
*20350	D. Black, Cicero.....	211	956	047	Yes.....	None.....	Heavy.
20420	D. E. Small, Kokomo.....	0.262	470	None.....	Yes.....	None.....	Heavy.
20525	B. E. Timmons & Son, Anderson.....	0.220	631	None.....	Yes.....	None.....	Heavy.
*20544	F. Hayes, Greenfield.....	257	199	037	Small.....	None.....	Heavy.
20598	W. L. Brown, Indianapolis.....	327	075	.....	None.....	Yes.....	Medium.
20693	J. E. Davis, Winchester.....	0.181	1000	None.....	Yes.....	Yes.....	Heavy.
20919	Sent in from Ft. Wayne.....	0.144	405	None.....	Yes.....	None.....	Heavy.
20920	Sent in from Indianapolis.....	0.293	540	None.....	Yes.....	None.....	Heavy.
21048	Sent in from Wabash.....	0.126	392	None.....	Yes.....	None.....	Heavy.
21131	Jno. Howard, Knightstown.....	0.25	813	0.0	Yes.....	None.....	Heavy.
21183	Wm. Pratt, Sharpville.....	0.19	937	0.0	Much.....	None.....	Heavy.
*21221	Spangler & Jones, Camden.....	0.15	.....	0.0	Much.....	None.....	Heavy.
	J. W. Moore & Son, Indianapolis.....	0.497	0.114	0.179	None.....	Present.....	Present.

*Property labeled.

VANILLA EXTRACT—ILLEGAL.

Lab. No.	Manufacturer or Retailer.	Vanillin.	Normal Lead Number.	Coumarin.	Precipitate in Dealcobolised Extract.	Lead Subacetate Precipitate.
19807	C. T. Boyer, LaFontaine.....	.12	.064	.14	None.....	Very slight.
*19948	C. H. Rinnie, Indianapolis.....	0.26	.413	0.0	None.....	Medium.
*20077	Morca Grocery Store, Morca.....	0.42	.117	0.0	None.....	Very slight.
20277	Chas. Leich & Co., Evansville..	0.159	0.633	.....	Yes.....	Heavy.
*20691	J. E. Davis, Winchester.....	.586	.097	.118	None.....	Light.
*21002	Frank Lassu, South Bend.....	.036	.142	.021	Cloudiness.....	Light.
*21065	C. H. Sudhoff, Richmond.....	0.311	0.107	0.106	No turbidity..	
*21148	Emil Mueller, Indianapolis.....	0.616	0.101	None....	No turbidity..	

*Caramel present.

MISCELLANEOUS EXTRACTS.

Ten of the 16 samples of miscellaneous extracts analyzed were illegal. An orange flavoring contained no oil of orange and was artificially colored. Samples of strawberry, banana and pineapple flavorings contained none of the true oils or esters, and were classed as illegal. Such extracts as peppermint, cinnamon and ginger frequently contained less than the required amount of essential oil or extract.

MISCELLANEOUS EXTRACTS.

Lab. No.	Manufacturer or Retailer.	Article.	Specific Gravity 20°C.	Alcohol Per Cent. by Vol.	Per Cent. Oil by Vol.	Polar. 20 mm. Tube.	Remarks.
18277	E. J. Barton, Arroyo	Orange Flavoring	.9413	44.0	.....	0.0	Not orange. Color artificial.
18689	C. W. & M. C. Moon, Lakeville	Extract Peppermint	.9182	54.1	0.9	.....	Illegal.
18690	W. A. Whiteman, Mishawaka	Extract Cinnamon	.9240	47.8	0.7	.....	Illegal.
18697	W. A. Whiteman, Mishawaka	Extract Almond	.9403	44.5	1.8	.....	Legal.
19433	B. Chaney, Coal City	Extract Orange	.832	84.1	5.0	26.2	Legal.
19432	.....	Extract Almond	.8373	87.5	3.8	.....	Labelled.
19433	Sent in from Greensburg	Extract Cinnamon	.8265	82.2	3.0	.....	Legal.
19563	Sent in from Greensburg	Extract Orange	.8293	84.9	5.09	27.0	Legal.
19564	Wm. H. Block Co., Indianapolis	Extract Orange	.8233	84.9	5.09	.....	Legal.
20274	H. G. Deck, Noblesville	Extract Strawberry	.9648	31.7	.....	.....	Short weight. Not extract strawberry.
20278	Chas. Leitch & Co., Evansville	Extract Orange	.8450	84.8	4.4	.....	Below standard.
20323	H. G. Deck, Noblesville	Extract Banana	.9578	36.1	.....	.....	Short weight. Not extract banana.
21084	Bud Ransom, Frankfort	Ginger	.9304	49.0	.....	.....	Below standard.
21150	Emil Mueller, Indianapolis	Banana Flavoring	.....	.....	.....	.....	.....
21151	Emil Mueller, Indianapolis	Pineapple Flavoring	.9568	34.1	.....	.....	Misbranded.
21202	August Snider, Logansport	Wintergreen Extract	.8962	67.2	3.1	.....	Legal.

FLOURS.

Of the 30 samples of flour analyzed but seven were classed as illegal, in every instance except one because of the presence of nitrites left as a residue of the bleaching process. One sample was condemned because it contained the fungus *aspergillus niger*.

FLOUR—LEGAL.

Lab. No.	Manufacturer or Retailer.	Where Collected.	Nitrites.
19237	Noblesville Milling Co.	Noblesville.	No nitrites.
19238	Geo. Strickler.	Logansport.	No nitrites.
19239	Geo. Strickler.	Logansport.	No nitrites.
19306	Blanton Milling Co.	Indianapolis.	No nitrites.
19309	Blanton Milling Co.	Indianapolis.	No nitrites.
19310	Blanton Milling Co.	Indianapolis.	No nitrites.
19311	Blanton Milling Co.	Indianapolis.	No nitrites.
19312	Blanton Milling Co.	Indianapolis.	No nitrites.
19322	Blanton Milling Co.	Indianapolis.	No nitrites.
*19639	Geo. M. Hayes.	Hamlet.	No nitrites.
*19788	Lewis McClure.	New Paris.	No nitrites.
*19800	Cloud & Son.	Macy.	No nitrites.
*19801	Cloud & Son.	Macy.	No nitrites.
†20057	.....	Tell City.	No nitrites.
20129	Blanton Milling Co.	Indianapolis.	No nitrites.
20488	T. G. Swarts.	North Liberty.	No nitrites.
*20680	Grocers Baking Co.	Indianapolis.	No nitrites.
*20681	Grocers Baking Co.	Indianapolis.	No nitrites.
*20682	Grocers Baking Co.	Indianapolis.	No nitrites.
20684	Geiger-Tinney Co.	Indianapolis.	No nitrites.
20950	Blanton Milling Co.	Indianapolis.	No nitrites.
21060	Singler & McDermott.	Garrett.	No nitrites.
21100	Cadick Milling Co.	Grandview.	No nitrites.

*Buckwheat flour. †Gum gluten flour.

FLOUR—ILLEGAL.

Lab. No.	Manufacturer or Retailer.	Where Collected.	Nitrites.	Remarks.
19313	Indianapolis. ....	.....	Bleached.
19321	Indianapolis.	Present.	Sample bleached.
19493	Princeton. ....	.....	Sample bleached.
19648	Pendleton. ....	.....	Sample bleached.
*19786	Knox. ....	.....	<i>Aspergillus niger</i> present.
20068	Indianapolis.	Present.	Sample bleached.
21061	I. E. Zerkle.	Butler.	Present.	Sample bleached.

*Buckwheat flour.

CATSUPS.

Of the 40 samples of catsup analyzed during the year 30, or 75 per cent. were illegal, in every case because of the presence of benzoate of soda. In many instances the goods were also misbranded. These samples have, for the most part, represented old stock, and the results here indicated can not be taken as evidence of the condition of the catsups now being sold.

CATSUP—LEGAL.

Lab. No.	Manufacturer or Retailer.	Brand.	Benzocate.	Remarks.
18222	Etter & Cooper, Greencastle	Golden Rod	Absent	No starch. No saccharin.
18314	Jas. D. Porter, Brazil	Wabash	Absent	
18410	A. H. Perfect & Co., Ft. Wayne .....	.....	Absent
18494	C. M. Lamew, Knox	Burro	Absent	
18619	E. VanHautin & Son, Cayuga	Home Like	Absent	
18626	Chas. M. Guy, Cayuga	Montrose	Absent	
19753	Sent in from Indianapolis	Cub	Absent	
19867	Sent in from Indianapolis	Kinsie	Absent	
19077	Williams Bros., Detroit	Williams	Absent	
20154	Wm. Lusakowski, South Bend	Williams .....	.....

CATSUP—ILLEGAL.

Lab. No.	Manufacturer or Retailer.	Brand.	Benzocate.	Remarks.
15274	Jas. H. Eahm, Ft. Wayne	Home Made	Present	Starch present. Fields showing mould spores.
18159	Ragon Bros., Evansville	Hirsch	Present	
18238	John Hume, Logansport	Present	Much sediment.
18342	J. B. Sherwood, Linton .....	.....	Present
18492	C. M. Larrew, Knox .....	.....	Present
18493	C. M. Larrew, Knox .....	.....	Present
18569	Mrs. Margaret Targett, Brazil	Squire	Present	
18578	Mrs. J. L. Morgan, Cardonia	May Day	Present	
18598	C. B. Jenkins, Coalmont	Walton	Present	
18614	Wm. S. Chamberlain, Poland .....	.....	Present
18725	Chas. A. Black, Bainbridge	Bay Star	Present	
18744	Atlantic & Pacific Tea Co., Indianapolis .....	.....	Present
18981	L. S. Kowlski, South Bend	West Shore	Present	Fields showing mould spores.
18982	L. S. Kowlski, South Bend	West Shore	Present	
19985	C. J. Kramer, Crown Point	West Shore	Present	
19986	C. J. Kramer, Crown Point	Monogram	Present	
19078	Williams Bros., Detroit	Williams	Present	
19082	Libby, McNeil & Libby, Chicago	Libbys Chili Sauce	Present	
19105	Sent from South Bend	Winorr	Present	
19104	Sent from South Bend	Monogram	Present	
19537	Sent from Louisville, Ky	Best Quality	Present	
19649	Sent from Rochester	Waldorf	Present	
19724	J. C. Austgen, Hammond	Cupid	Present	
19725	J. C. Austgen, Hammond	Blue Point	Present	
19987	Thos. Keekick, Hammond	Purity	Present	
20007	H. A. Zierau, Gary .....	.....	Present
20009	H. A. Zierau, Gary	Cupid	Present	
20071	Sent in from Baltimore	Dog Head	Present	
20073	Sent in from Baltimore	Dog Head	Present	
20097	Whiteman Bros. Co., South Bend	Tomato	Present	8% fields showing mould spores.

TOMATO PULP.

Lab. No.	Manufacturer.	Moulds.	Yeasts.	Specific Gravity.	Remarks.
19898	Present	Present .....	.....	Illegal.
19899	Present	Present .....	.....	Illegal.
19904	Present .....	.....	.....	Legal.
20411	Much	Some .....	.....	Illegal.
20412	Considerable	Some .....	.....	Illegal.
21178	Present	Very few	1.025	Legal.
21179	Present	Very few	1.044	Legal.
21180	Present	None	1.035	Legal.

FRUIT CIDERS.

Of the 34 samples of fruit ciders analyzed, 24 were illegal, in nearly every instance because of the presence of preservatives. Some of the ciders also contained saccharin, and a number were artificially colored. Most of these products are not genuine ciders, being, instead, built up on an apple cider base by the addition of flavors, sugars and coloring.

FRUIT CIDERS—LEGAL.

Lab. No.	Manufacturer or Retailer.	Brand.	Preservative.
19373	Sent in from Washington.....	Apple Cider.....	None.
19376	Sent in from Washington.....	Cherry Cider.....	None.
19419	Clarksville Cider & Vinegar Co.....	Blackberry Cider.....	None.
19470	Draper, Sullivan.....	Apple Cider.....	None.
19503	Sent in from Clarks Hill.....	Cider.....	
19504	Sent in from Hammond.....	Cider.....	None.
19881	Recker's Bottling Works.....		None.
19887	Red Cross, St. Louis.....	Apricot Cider.....	None.
20012	Sent in from Washington.....	Cider.....	None.
20351	Phillip Mann, Elwood.....	Orange Cider.....	None.

FRUIT CIDERS—ILLEGAL.

Lab. No.	Manufacturer or Retailer.	Brand.	PRESERVATIVES.			Remarks.
			Saccharin.	Bonacate.	Salicylic.	
19326	Sent in from Indianapolis.	Cider.	None.	Present.	Absent.	
19398	Genecio Gusto & Co., Chicago.	Cider.	None.	Present.	Absent.	
19409	Made at Louisville.	Blackberry	Present.	Present.	None.	Adulterated.
19410	Made at Louisville.	Apple Cider	Present.	Present.	None.	
19411	Made at St. Louis.	Mexi Cola.	None.	Present.	None.	
19416	Sent in from Attica.	Apple Cider	None.	Present.	None.	
19417	Louisville Cider & Vinegar Co., Louisville.	Apple Cider	Present.	Present.	None.	
19418	Clarksville Cider & Vinegar Co.	Apple Cider	None.	Present.	None.	
19701	Sent in from Waveland.	Apple Cider	None.	Present.	None.	
19802	Crown Cider Co., St. Louis.	Blackberry	None.	Present.	None.	
19831	Sent in from Attica.	Cider.	None.	None.	None.	
19833	Sent in from Vincennes.	Orange Cider	None.	None.	None.	Artificially colored.
19838	Sent in from Sullivan.	Sweet Cider	None.	Present.	None.	Artificially colored.
19839	Floyd Durham, Sullivan.	Sweet Cider	None.	Present.	None.	
19891	Sullivan Fruit Co., Sullivan.	Apple Cider	None.	Present.	None.	
19894	B. F. Meatel, Farmertown.	Apple Cider	None.	Present.	None.	
19896	B. F. Meatel, Farmertown.	Glass Cider	Present.	None.	None.	Coal tar color.
19968	Sent in from Lafontaine.	Cherry Cider	Present.	None.	None.	Coal tar color.
*19969	Sent in from Indianapolis.	Cider.	None.	Present.	None.	
*19970	Sent in from Indianapolis.	Cider.	None.	None.	None.	
*19971	Sent in from Indianapolis.	Cider.	None.	None.	None.	
20004	Sent in from Lafontaine.	Cider.	None.	None.	None.	Coal tar coloring.
20017	Sent in from North Vernon.	Cider.	None.	None.	None.	Coal tar coloring.
20895	Sent in from Middletown.	Cider.	None.	None.	None.	Not a pure cider.

*Low in solids.

JELLIES.

Twenty of the 21 samples of jellies analyzed were legal, being properly labeled, free from preservatives, and in other respects in compliance with the Pure Food Law. The illegal sample contained no statement as to the presence of glucose.

JELLIES—LEGAL.

Lab. No.	Classification.	Manufacturer.	POLARIZATION.		Sucrose.	Glucose.	Residue of Soda.
			Direct.	Invert.			
19081	Glucose-Apple Jelly	Williams Bros., Detroit.	+131.4	+127.06	2.6	73.6	None.
19327	Current Jelly	Bessire & Co., Indianapolis.	+10.0	-19.8	22.6	None.	Label legal.
19714	Grape-Apple Jelly	Chicago Concentrating Co., Chicago.	+11.2	-18.92	23.1	None.	Legal—None.
19715	Current Jelly	Chicago Concentrating Co., Chicago.	+12.4	-20.03	24.1	None.	None.
19716	Raspberry-Apple	Olerick & Berry Co., Chicago.	+115.1	+113.53	1.1	65.7	None.
19988	Imp. Fruit Jelly	Reed, Indianapolis.	+20.8	-24.6	60.46		None.
20711	Strawberry Jelly	Reed, Indianapolis.	+30.0	-21.9	71.11		
20712	Blackberry Jelly	Mrs. Geo. M. Kreig, Indianapolis.	+62.0	-22.9	71.15		
20716	Raspberry Jelly	Mrs. Geo. M. Kreig, Indianapolis.	+46.4	-23.3	67.35		
20717	Strawberry Jelly	Mrs. Geo. M. Kreig, Indianapolis.	+36.0	-21.8	66.97		
20718	Current Jelly	Mrs. Geo. M. Kreig, Indianapolis.	+61.2	-21.8	69.58		
20719	Apple Jelly	Mrs. Geo. M. Kreig, Indianapolis.	+52.0	-22.9	70.20		
20720	Grape Jelly	Mrs. Geo. M. Kreig, Indianapolis.	+42.0	-22.0	63.88		
20721	Quince Honey	Mrs. Geo. M. Kreig, Indianapolis.	+61.4	-22.9	69.35		
20722	Crab Apple Jelly	Bessire & Co., Indianapolis.	+11.2	-22.5	59.94		
20731	Fruit Jelly	Geo. Berry, Indianapolis.	+36.2	-22.0	66.50		
20745	Strawberry and Apple Jelly	Reed, Indianapolis.	+42.8	-23.1	68.83		
20746	Plain Apple Jelly	Reed, Indianapolis.	+24.2	-22.0	69.92		
20747	Blackberry-Apple Jelly	Reed, Indianapolis.	+31.6	-24.0	63.36		
20748	Raspberry-Apple Jelly	Reed, Indianapolis.					

JELLY—ILLEGAL.

Imp. Fruit Jelly	Jno. A. Tolman, Chicago	+116.8	+115.9	Trace	66.7	Misbranded.
20037						

SUGAR PRODUCTS.

Of the 20 samples of syrups analyzed, four were classed as illegal because of faulty labeling. Three were labeled maple syrups, and one, a glucose syrup, did not show the glucose content.

SYRUPS.

Lab. No.	Retailer or Manufacturer.	Brand.	PER CENT. ASH.		ALKALINITY OF ASH.		POLARIZATION.		Sucrose.	Remarks.
			Total.	Insoluble.	Soluble.	Insoluble.	Direct.	Invert.		
16536	J. J. Sumpter, Converse.....	Sorghum.....	3.12	.56	256	132	+38.8	-16.72	42.1	Legal.
18087	Brooklyn & Son, Goshen.....	Old Homestead.....	4.61	.93	320	132	+33.6	-21.56	41.9	Legal.
19092	A. L. Whelan, Leesport.....	Syrup.....	.52	.08	38	13	+151.0	+138.82	9.2	Legal.
19294	L. M. Shoemaker, Kewana.....	Sorghum.....	2.93	.81	238	162	+32.4	-18.04	38.3	Legal.
19300	F. E. Platt, Galveston.....	Corn and Cane Syrup.....	.77	.21	33	50	+148.0	+142.78	3.9	Legal.
19457	Ambrose Mather, Columbus.....	King Syrup.....	.31				+57.6	-22.2	60.6	Legal.
19460	J. C. Perry & Co., Columbus.....	King Syrup.....	.18				+55.2	-21.78	58.4	Legal.
19442	F. S. Rhoades, Rensselaer.....	Sorghum.....	2.28	.51	168	133	+36.6	-15.4	39.5	Legal.
19554	F. A. McParland, Warsaw.....	Sorghum.....	2.85	.32	280	96	+51.0	-9.24	45.5	Legal.
19735	Evans & Jackson, Warsaw.....	Maple and Corn Syrup.....	.63				+73.6	-22.0	72.4	Legal.
19781	Ewing Bros., Rochester.....	Blended Syrup.....			12	8	+65.6	-20.4	66.3	Legal.
19960	L. A. Sarbaugh, Goshen.....	Golden Tree.....	.04				+61.0	-18.6	61.4	Label misleading; not a maple syrup.
19975	L. C. Nicholson, Indianapolis.....	Syrup.....	.19				+52.8	-18.6	55.0	Not a maple syrup.
20242	C. S. Crocker, North Vernon.....	Ohio Blended.....					+150.6	+142.0	13.0	Properly labelled.
20729	H. K. Bisey, Indianapolis.....	Glucose & N. O. Molasses.....					+131.8	+122.0	15.5	Legal.
20734	I. Prince, Indianapolis.....	Corn & N. O. Molasses.....					+155.4	+147.0	19.0	Legal.
20735	I. Prince, Indianapolis.....	Vanilla Drip.....					+161.4	+150.2	22.6	A glucose syrup; not so declared on label of package.
20736	I. Prince, Indianapolis.....	Excellence.....					+44.8	-20.5		Not a maple syrup; misbranded.
21155	Beitman-Wolf Co., Walhath.....	Vermont.....					+6.8	+0	33.4	Legal.
21524	Publishing Bros., Newbury.....	Sorghum.....								

SUGARS.

Lab. No.	Article.	Manufacturer or Retailer.	Remarks.
21112	Sugar.....	Sent in from Winchester.....	Legal.
21175	Cane Sugar.....	Sent in from Vera Cruz.....	Legal.

MAPLE SYRUPS AND SUGAR.

MAPLE SYRUP.

Of the 34 maple syrups analyzed, 19 were legal and 15 illegal. Thirteen of the 15 illegal samples were sent in by customers who suspected the quality of the goods, and, upon analysis, found to be maple products to which sugar syrups had been added.

MAPLE SYRUP—LEGAL.

Lab. No.	Retailer or Manufacturer.	POLARIZATION.		Succose.	Total Ash.	ALKALINITY OF ASH.		Solids.
		Direct.	Invert.			Soluble.	Insoluble.	
19000	Sent from Crawfordville.	+9.4	-19.8	23.4	.60	54	64	65.94
20091	Sent from Huntington.	+64.2	-21.34	65.4	.86	60	54	69.5
20131	Sent from Legasport.	+59.6	-22.22	62.8	.78	46	70	69.5
20241	Sent in from Lafayette.	+52.7	-20.9	55.1	.51	30	60	64.87
20259	Mrs. Henry Bean, Spencer.	+67.0	-22.22	68.2	.69	68	52	71.75
20260	Coas Bros., Coal City.	+59.0	-20.22	60.9	.72	58	80	65.84
20264	J. E. Dyar, Freehold.	+62.6	-20.68	63.7	.69	58	72	65.29
20274	Sent from Bellefontaine.	+56.2	-21.56	59.4	.68	50	84	68.14
20310	Sent from Indianapolis.	+64.0	-21.12	64.9	.68	60	64	68.0
20345	Sent from Edinburg.	+63.3	-21.12	64.9	.68	60	64	68.0
20347	Sent from Flat Rock.	+64.4	-22.0	66.4	.49	44	52	69.19
20347	Sent from Greenwood.	+26.2	-20.2	37.2	.59	46	66	68.29
20366	Sent from Fulton.	+49.6	-18.7	52.4	.85	48	100	67.0
20367	Sent from Indianapolis.	+56.0	-18.92	56.69	.65	40	56	61.62
20358	Sent from Indianapolis.	+59.2	-20.9	60.61	.62	40	36	65.67
20359	Sent from Indianapolis.	+57.4	-20.24	60.11	.65	30	44	62.07
20461	Kottman & Totty, Brazil.	+59.4	-18.7	60.2	.75	52	70	63.47
20743	W. T. Russell Bros., Fulton.	+48.0	-23.10	54.23	.95	70	68	68.22
20897	Sent in from Terre Haute.	+65.0	-24.3	68.10	.57	48	64	67.77
21259	Sent in from Indianapolis.	+59.6	-18.6	59.8	.73	66	48	67.77

MAPLE SYRUP—ILLEGAL.

Lab. No.	Retailer or Manufacturer.	POLARIZATION.		Succose.	Total Ash.	ALKALINITY OF ASH.		Solids.
		Direct.	Invert.			Soluble.	Insoluble.	
19256	Atlantic & Pacific Tea Co., Terre Haute.	+54.6	+10.12	34.0	.39	36	50	67.2
20068	Sent in from Graham.	+65.0	-22.0	66.5	.49	32	62	69.7
20069	Sent in from Graham.	+65.0	-22.06	67.5	.84	32	64	69.7
20090	Sent in from Graham.	+64.4	-22.68	66.8	.42	26	54	68.7
21025	Sent in from Chilli.	+68.0	-22.22	69.0	.40	24	36	69.47
20149	Sent in from Indianapolis.	+65.7	-23.1	68.2	.46	25	44	69.47
20152	Sent in from Indianapolis.	+65.2	-21.56	66.0	.48	27	32	67.7
20227	Sent in from Monticuma.	.....	.....	.....	.48	32	44	68.17
20239	Sent in from Richmond.	+63.8	-21.34	64.0	.35	24	36	68.17
20249	Sent in from Indianapolis.	+64.3	-21.46	64.7	.34	26	36	68.59
20256	Sent in from Indianapolis.	+64.8	-21.45	64.7	.40	24	36	68.59
20273	Sent in from Monticuma.	+63.8	-21.45	64.7	.46	24	36	68.59
20319	A. Lehman, Indianapolis.	+63.0	-20.9	64.0	.46	34	40	67.34
20512	Sent in from Greenwood.	+57.0	.....	43.1	.59	36	78	53.84

MAPLE SUGAR.

Thirteen maple sugars were analyzed, four of which contained sugars other than maple.

MAPLE SUGAR.

Lab. No.	Retailer or Manufacturer.	POLARIZATION.		Sucrose.	Total Ash.	ALKALINITY OF ASH.		Remarks.
		Direct.	Invert.			Soluble.	Insoluble.	
19372	Cabel Kaufman, Washington.	+82.6	-23.1	80.8	1.10	62	120	Legal.
19876	L. C. Nicholson, Indianapolis.	+84.2	-26.0	84.9	.27	20	24	Legal.
20003	Sent in from Hahnburg.				1.70	94	140	Legal.
20062	Sent in from South Bend.				.13			Legal.
20076	E. J. Barton, Freedom.	+67.0	-31.56	62.4	.54	32	64	Legal.
20082	Coal City Mercantile Co.	+84.1	-29.04	87.1	1.25	80	104	Legal.
20147	J. E. Dyar, Freedom.	+76.8	-28.6	81.2	1.79	76	122	Legal.
20263	J. E. Dyar, Freedom.	+82.0	-30.8	86.9	1.35	92	123	Legal.
20265	Sent in from Dayton, Ohio.	+88.6	-31.24	92.4	1.15	80	120	Legal.
20509	Frank F. Henry, Indianapolis.				.31	26	13	Legal.
20511	Cyrus F. Kinane, Hoover.	+59.5	-19.58	61.2	.46	32	50	Legal.
20513	C. M. Mooney, Terre Haute.	+56.3	-17.38	56.6	.61	32	76	Legal.
21007		+85.2	-29.08	88.1	.87	64	88	Legal.

HONEY.

The 10 samples of honey analyzed were all legal. No adulterated honeys have been found for several years. When we recall the almost universal adulteration of honey before the passage of the Pure Food Law, the improvement is the more to be commented upon.

HONEY—LEGAL.

Lab. No.	Name and Address of Retailer.	POLARIZATION.		Sucrose.	Invert Sugar, Per Cent.	Total Ash, Per Cent.	Remarks.
		Direct.	Invert.				
19241	W. S. Frazer, Indianapolis	-18.4	-19.36	None.	67.8	.....	Legal.
19314	W. H. Rogers, Madison	-18.2	-20.24	None.	67.1	.....	Legal.
19489	Eugene Baldwin, Indianapolis	-16.3	-21.34	3.8	71.3	.....
19490	Sent in from Hammond	-22.0	-23.1	Trace.	70.8	.21	
19730	Sent in from Indianapolis	-14.8	-16.28	1.13	80.3	.06	
19740	Sent in from Indianapolis	-17.5	-21.56	2.3	77.2	.08	
19992	Jacob Cannels, Hammond	-16.6	-19.58	2.3	78.4	.19	No artificial invert sugars.
20081	Coon Bros., Clay City	-20.8	-23.0	Trace.	76.8	.09	No artificial invert sugars.
20896	Sent in from Shipheavana	-7.6	-8.25	.22	62.69	.....	High in water content.
21003	Sent in from Shipheavana	-7.9	-8.58	.25	62.74	.....	High in water content.

OLIVE OIL.

Of the 25 samples of olive oil analyzed, 17 were legal and 8 illegal. Seven of the 8 illegal samples contained cotton seed oil.

OLIVE OIL—LEGAL.

Lab. No.	Manufacturer or Dealer.	Specific Gravity at 20°C.	Refractive Index at 20°C.	Halphen's Test.
19095	Geo. A. Marshall, Logansport.....	.9132	1.4685	Negative.
19181	Sent in from Greencastle.....	.9127	1.4690	Negative.
19182	Sent in from Greencastle.....	.9132	1.4687	Negative.
19618	Bruno Knofel, New Albany.....	.9128	1.4690	Negative.
19756	Sent in from Indianapolis.....	.9130	1.4685	Negative.
19761	Z. L. Bryson, Nappanee.....	.9130	1.4687	Negative.
19768	J. S. Walters, Nappanee.....	.9140	1.4685	Negative.
19771	C. W. Johnson, Nappanee.....	.9135	1.4685	Negative.
19961	L. A. Sarbaugh, Goshen.....	.9130	1.4685	Negative.
20042	Ed. Moran, Michigan City.....	.9130	1.4685	Negative.
20046	Otto Kloepter, Michigan City.....	.9130	1.4690	Negative.
20049	Woodson & Willets, Michigan City.....	.9140	1.4692	Negative.
20231	Sent in from Indianapolis.....	.9127	1.4687	Negative.
20628	Sent in from Columbus.....	.9137	1.4687	Negative.
20705	E. W. Andars, Red Key.....	.9136	1.4678	Negative.
21430	W. T. Hanson, Peru.....	.9136	1.4682	Negative.
21451	J. R. Mason, Shipshewana.....	.9133	1.4685	Negative.

OLIVE OIL—ILLEGAL.

Lab. No.	Manufacturer or Dealer.	Specific Gravity at 20°C.	Refractive Index at 20°C.	Remarks.
19277	Frank E. Hanson, Peru.....	.9190	1.4725	Cotton seed oil present.
19873	Krusher & Fishbach, Peru.....	.9183	1.4722	Improperly labelled.
19874	John Barron, Bunkerhill.....	.9195	1.4725	Cotton seed oil present.
19859	L. A. Sarbaugh, Goshen.....	.9195	1.4725	Cotton seed oil present.
20020	L. G. Kramer, Michigan City.....	.9195	1.4720	Cotton seed oil present.
20054	Ohming Drug Co., Michigan City.....	.9195	1.4722	Cotton seed oil present.
20575	Sent in from Indianapolis.....	.....	.....	Cotton seed oil present.
21461	J. R. Mason, Shipshewana.....	.9212	1.4725	Cotton seed oil present.

PRESERVES.

BUTTERS AND JAMS.

Thirteen of the 17 miscellaneous preserves were pure. Four were classed as illegal, in two cases because of the presence of benzoate of soda, and two because of the neglect to show on the label the presence of glucose.

PRESERVES, BUTTERS AND JAMS—LEGAL.

Lab. No.	Classification.	Manufacturer.	Benzoate of Soda.
16130	Jelly Dessert.....	E. C. Rich, New York.....	None.
19289	Strawberry Comp.....	Lutz Schramm, Pittsburgh.....	None.
19708	Cherry Jam.....	Dodson & Braun, St. Louis.....	None.
19709	Raspberry Preserves.....	Dodson & Braun, St. Louis.....	None.
19710	Apple Butter.....	Dodson & Braun, St. Louis.....	None.
19718	Imitation Raspberry Jam.....	Chicago Concentrating Co.....	None.
19733	Strawberry Preserves.....	Twin City Grocery Co., Elkhart.....	None.
19793	Whortle Berry Jam.....	Brackett & Co., Rochester.....	None.
19794	Red Raspberry Jam.....	L. M. Brackett, Rochester.....	None.
19795	Blackberry Jam.....	L. M. Brackett, Rochester.....	None.
19990	Imitation Raspberry Jam.....	Knox Pickle & Preserve Works, Chicago.....	None.
20126	Apple Butter.....	L. C. Nicholson Co., Indianapolis.....	None.
18599	Sugar Butter.....	Rigney & Co., Brooklyn, N. Y.....	None.

PRESERVES, BUTTERS AND JAMS—ILLEGAL.

19707	Strawberry Jam.....	Dodson & Braun, St. Louis.....	Present.
19717	Imitation Strawberry Jam.....	Chicago Concentrating Co., Chicago.....	Misbranded. Glucose not stated.
19901	Imperial Peach.....	Stevenson Grocery Co., Chicago.....	Misbranded. Glucose not declared on label.
20128	Figs and Apple Jam.....	Webster Canning & Preserving Co., Webster, N. Y.	Benzoate present.

CANNED FRUITS.

Four of the five canned fruits were legal. One illegal sample contained added gelatin.

CANNED FRUITS.

Lab. No.	Classification.	Manufacturer.	Remarks.
15194	Pineapple.....	Williams Bros., Detroit.....	Labelled O. K.
19582	Peaches, Vendome Brand.....	Golden Gate Packing Co., San Jose, Cal.	Illegal—Gelatin present.
19583	Yellow Peaches.....	Golden Gate Packing Co., San Jose, Cal.	No gelatin—Legal.
19584	Peaches, Violet Brand.....	Golden Gate Packing Co., San Jose, Cal.	No gelatin—Legal.
20863	Cherries.....	Sent in from Richmond, Ind.....	No benzoic acid, no artificial color.

TOMATO SOUP.

Seven tomato soups were examined and in every case were pronounced legal. Several samples, however, contained more moulds and yeasts than should have been present, and indicated the employment of raw materials which were not entirely suitable for use.

TOMATO SOUPS.

Lab. No.	Manufacturer or Dealer.	Moulds.	Yeasts.	Benzene of Soda.
19914	C. Bauer, Indianapolis.....			None.
19919	New York Store, Indianapolis.....	Many	Few	None.
19920	New York Store, Indianapolis.....	Few	Much	None.
19926	M. C. Shea, Indianapolis.....	Much	Few	None.
19927	M. C. Shea, Indianapolis.....	Much	Much	None.
19928	M. C. Shea, Indianapolis.....			None.
20002	Anterelli Bros., Indianapolis.....	Very few	Very few	None.

MEAT AND MEAT PRODUCTS.

PREPARED MEATS.

Twenty-eight of the 35 prepared meats analyzed, including sausages of different kinds, dried beef, mutton, hamburger, etc., were legal, being free from added starch, borax and sulphites. Three samples of sausage were classed as illegal because of the presence of starch, and two because of the use of borax, which was found in a vienna sausage. Two hamburger steaks contained sulphites and were classed as illegal.

PREPARED MEATS—LEGAL.

Lab. No.	Classification.	Manufacturer.	Starch.	Borax.	Sulphites.
19285	Bologna.....	P. & L. Langrave, Peru.....	Absent...	Absent...	Absent.
19292	Sausage.....	Geo. F. Molt, Kewana.....	Absent...	Absent...	Absent.
19301	Sausage.....	Hubler Bros., Galveston.....	Absent...	Absent...	Absent.
19304	Sausage.....	S. Coleman, Walton.....	Absent...	Absent...	Absent.
19332	Pan Sausage.....	Bills & Boettcher, Indianapolis.....	Absent...	Absent...	Absent.
19333	Hamburger.....	Bills & Boettcher, Indianapolis.....	Absent...	Absent...	Absent.
19334	Sausage.....	Frank Schussler, Indianapolis.....	Absent...	Absent...	Absent.
19335	Hamburger.....	Frank Schussler, Indianapolis.....	Absent...	Absent...	Absent.
19336	Pan Sausage.....	C. Bauer, Indianapolis.....	Absent...	Absent...	Absent.
19337	Summer Sausage.....	Wm. O. Soffel, Indianapolis.....	Absent...	Absent...	Absent.
19338	Summer Sausage.....	Anna Wolfe, Indianapolis.....	Absent...	Absent...	Absent.
19339	Summer Sausage.....	Henry Debrowitz, Indianapolis.....	Absent...	Absent...	Absent.
19340	Bologna Sausage.....	Henry Debrowitz, Indianapolis.....	Absent...	Absent...	Absent.
19342	Bologna Sausage.....	Chas. Gardner, Indianapolis.....	Absent...	Absent...	Absent.
19343	Summer Sausage.....	Chas. Gardner, Indianapolis.....	Absent...	Absent...	Absent.
19344	Summer Sausage.....	Moses Kline, Indianapolis.....	Absent...	Absent...	Absent.
19345	Bologna Sausage.....	Moses Kline, Indianapolis.....	Absent...	Absent...	Absent.
19346	Bologna Sausage.....	Ben Maso, Indianapolis.....	Absent...	Absent...	Absent.
19347	Smoked Sausage.....	Ben Maso, Indianapolis.....	Absent...	Absent...	Absent.
19506	Meat.....		Absent...	Absent...	Absent.
19579	Sausage—Pork.....		Absent...	Absent...	Absent.
19678	Dried Beef.....	Coon Bros., Clay City.....	Absent...	Absent...	Absent.
19702	Dried Beef.....	Coon Bros., Clay City.....	Absent...	Absent...	Absent.
19829	Sausage.....	Sent in from Plainfield.....	Absent...	Absent...	Absent.
19848	Mutton.....	Sent in from Whiting.....	Absent...	Absent...	Absent.
20538	Weinerwurst.....	G. C. Barsler, Terre Haute.....	Absent...	Absent...	Absent.
20586	Sausage.....	Sent in from Pendleton.....	Absent...	Absent...	Absent.
20666	Sausage.....	Bills & Boettcher, Indianapolis.....	Absent...	Absent...	Absent.

PREPARED MEATS—ILLEGAL.

Lab. No.	Classification.	Manufacturer.	Starch.	Borax.	Sulphites.
19320	Hamburger.....	Sent in from Hammond.....	Absent...	Absent...	Present.
19341	W. Sausage.....	Chas. Gardner, Indianapolis.....	Present...	Absent...	
19333	Weinewurst.....	Sent in from Hammond.....	Present...	Absent...	
19357	Vienna Sausage.....	L. A. Sarbaugh, Goehen.....	Absent...	Present...	
19358	Vienna Sausage.....	L. A. Sarbaugh, Goehen.....	Present...	Absent...	Present.
19367	Bologna.....	Sent in from Mishawaka.....	Present...	Absent...	
20064	Hamburger.....	Sent in from Muncie.....	Present...	Absent...	

OYSTERS.

Eight of the nine samples of oysters were legal, containing no added water and being otherwise satisfactory.

OYSTERS—LEGAL.

Lab. No.	Retailer.	Weight, Grams.	Per Cent. Free Water.
19351	T. J. Egan, Indianapolis.....	92.5	7.5
19352	Geo. A. Nicholson, Indianapolis.....	85.6	14.4
19353	Bowder's Fish Market, Indianapolis.....	88.1	11.9
19354	McCormick & Co., Indianapolis.....	91.2	8.8
19355	J. P. Eden, Indianapolis.....	88.3	11.7
19356	J. Lamerall, Indianapolis.....	86.5	13.5
19357	J. P. Eden, Indianapolis.....	87.7	12.3
19358	C. O. Mills, Indianapolis.....	.....	15.2
19311	Sent in from Evansville.....	.....	.....

LARD.

Nineteen of the 22 lards analyzed were legal. Three lards contained added beef stearin. Two of the six samples also contained cotton seed oil, and were evidently compound lards. The practice, once commonly followed, of adulterating lard with stearin and fats other than that of the hog, is largely abandoned.

LARD—LEGAL.

Lab. No.	Retailer or Manufacturer.	Butyro Reading at 40°C.	Remarks.
19384	Dan. M. McCormick, Greensburg.....	50.0	Contains no beef fat or cottonseed oil.
20188	Shick Bros., Elkhart.....	49.5	Contains no beef fat or cottonseed oil.
20193	Buehler Bros., Elkhart.....	49.6	Contains no beef fat or cottonseed oil.
20194	W. A. Griffin, Elkhart.....	48.8	Contains no beef fat or cottonseed oil.
20197	Cavanaugh & Pollard, Elkhart.....	49.6	Contains no beef fat or cottonseed oil.
20199	Robbins & Swinhart, Elkhart.....	48.7	Contains no beef fat or cottonseed oil.
20202	J. F. Canse & Co., Elkhart.....	48.8	Contains no beef fat or cottonseed oil.
20203	Gamerling & Bode, Elkhart.....	50.3	Contains no beef fat or cottonseed oil.
20204	Golden & Gamberling, Elkhart.....	49.7	Contains no beef fat or cottonseed oil.
20206	F. M. Swinehart, Elkhart.....	.....	Contains no beef fat or cottonseed oil.
20208	Ejman Bros., Elkhart.....	49.5	Contains no beef fat or cottonseed oil.
20489	Sent in from Galveston.....	50.3	Contains no beef fat or cottonseed oil.
20490	Sent in from Terre Haute.....	52.3	Contains no beef fat or cottonseed oil.
20560	Sent in from Indianapolis.....	50.1	Contains no beef fat or cottonseed oil.
20667	Bills & Boettcher, Indianapolis.....	50.5	Contains no beef fat or cottonseed oil.
20901	Sent in from Westport.....	50.7	Contains no beef fat or cottonseed oil.
21004	Chicago Meat Market, Terre Haute.....	51.5	Contains no beef fat or cottonseed oil.
21059	Sent in from Loantville.....	50.2	Contains no beef fat or cottonseed oil.
21143	Sent in from South Bend.....	50.2	Contains no beef fat or cottonseed oil.

LARD—ILLEGAL.

20192	Luaher Bros., Elkhart.....	56.6	Contains beef stearin and cottonseed oil.
20195	Elkhart Produce Co., Elkhart.....	48.3	Beef fat present—wrapper marked oleo.
20201	P. Rittel, Elkhart.....	53.0	Beef fat and cottonseed oil present.

VINEGARS.

CIDER VINEGAR.

Thirty-two of the 52 samples of cider vinegar analyzed met every requirement of the Pure Food Law. Twenty samples in some way failed to meet the requirements of the standard, either being low in acidity or solids, or artificial products made by the addition of mineral constituents, flavor and color to a distilled vinegar base. Many vinegars are now on the market under the name of cider vinegar, which are, in fact, sophisticated. It is probable that there is more adulteration of vinegars than any other class of foodstuffs.

CIDER VINEGAR—LEGAL.

Lab. No.	Manufacturer or Retailer.	Where Collected.	Acidity.	Solids.	Ash.	Alkalinity of Ash.	Color.	Lead Acetate Precipitate.	Polarization.
			Per Cent.						
19114	M. P. Stone.....	Indianapolis	4.65	2.594	.342	34.0	Normal	Medium	-1.8
19224	W. D. Huffman.....	Indianapolis	6.12	2.564	.351	34.0	Normal	Heavy	-1.2
19316	C. O. Mills.....	Indianapolis	4.00	2.039	.365	36.0	Normal	Heavy	-0.8
19317	C. O. Mills.....	Indianapolis	4.44	3.406	.387	38.0	Normal	Heavy	-1.4
19412	A. W. Harper.....	Indianapolis	4.21	2.197	.296	31.0	Normal	Medium	-1.2
19480	James S. Raydie.....	Indianapolis	4.37	1.905	.240	37.0	Normal	Heavy	-1.2
19755	Grocers Supply Co.....	Indianapolis	4.10	2.882	.342	37.0	Normal	Very slight	-0.8
19775	W. D. Richter & Son.....	Nappanee	4.00	2.882	.342	37.0	Normal	Medium	+0.0
19779	A. J. Lovelace.....	Indianapolis	4.42	2.613	.406	43.0	Normal	Medium	-1.2
19780	Beckerich Brothers.....	Indianapolis	4.51	2.350	.293	33.0	Normal	Medium	-1.2
19799	Clond & Son.....	Mary	4.14	2.042	.279	34.0	Normal	Light	+0.0
19808	Huntington Grocery Co.....	Huntington	4.26	2.709	.343	35.0	Normal	Medium	+0.0
19904	J. J. Austgen.....	Hammond	4.26	2.208	.262	25.0	Normal	Medium	-0.8
19995	Geo. A. Dobkins.....	Hammond	4.03	2.272	.276	25.0	Normal	Medium	-0.8
20002	Kothe, Wells & Bauer Co.....	Indianapolis	4.09	2.121	.257	28.0	Normal	Heavy	-1.0
20033	John Kintzale.....	Michigan City	4.87	1.691	.275	24.0	Normal	Medium	-0.6
20038	Fred J. Kruger.....	Michigan City	4.08	1.997	.213	32.0	Normal	Medium	-1.0
20096	Ragon Bros.....	Evansville	4.00	2.045	.175	40.0	Normal	Heavy	-1.8
20225	Fred M. Robinson.....	Tipton	4.00	2.049	.233	24.0	Normal	Heavy	-1.2
20555	Kothe, Wells & Bauer.....	Indianapolis	4.04	3.115	.335	28.0	Normal	Very slight	-1.0
20639	Grocers Supply Co.....	Indianapolis	4.25	2.009	.307	28.0	Normal	Light	-1.8*
20641	Schnull & Co.....	Indianapolis	5.36	1.867	.059	3.0	Normal	None	-0.8
20688	Grocers Supply Co.....	Indianapolis	4.19	2.007	.294	35.0	Normal	Medium	-0.8
20696	Thos. Best & Son.....	Winchester	4.16	2.992	.393	35.0	Normal	Medium	-1.0
20697	A. D. Hunkaw.....	Winchester	4.56	2.871	.461	43.0	Normal	Heavy	-0.8
20702	J. C. Platt & Son.....	Union City	4.16	2.035	.341	34.0	Normal	Medium	-0.6
20837	Henry Walters.....	Indianapolis	4.15	3.182	.363	36.0	Normal	Light	-0.4
21058	Schnull & Co.....	Indianapolis	4.12	2.495	.335	32.0	Normal	Slight	-0.6
21062	O. C. Wilcox.....	Indianapolis	6.20	1.663	.253	36.0	Normal	Very heavy	-0.4
21063	O. C. Wilcox.....	Indianapolis	5.06	2.325	.260	28.0	Normal	Very heavy	-1.2
21064	O. C. Wilcox.....	Indianapolis	5.68	3.735	.345	34.0	Normal	Very heavy	-5.6
21103	Kothe, Wells & Bauer Co.....	Indianapolis	4.19	3.735	.345	34.0	Normal	Medium	-0.4

*This sample is not sold as cider vinegar.

CIDER VINEGAR—ILLEGAL.

Lab. No.	Manufacturer or Retailer.	Where Collected.	Acidity.	Solids.	Ash.	Alkalinity of Ash.	Color.	Lead Acetate Precipitate.	Polarisation.	Remarks.
19170		Indianapolis	4.03	.291	.043	3.0	C. W. C.	None	+1.8	Sample contained trace of coal oil
19494		Marion	4.43	1.440	.146	12.0	Normal	Light	+0.0	Not a cider vinegar.
20032	G. A. Witte	Michigan City	4.64	.435	.040		C. W. C.	Very light	+2.4	Not a pure cider vinegar.
20035		Kirklin C. & J.	6.91	1.196	.208	16.0	Normal	Light	+0.0	Colored distilled vinegar.
20038		Indianapolis	4.58	.369	.040	2.0	C. W. C.	None	+1.0	Not a pure cider vinegar.
20040		Brownstown	3.72	2.773	.467	36.0	Normal	Heavy	-1.0	Not a pure cider vinegar.
20089	A. Smith	Dunkirk	3.53	0.552	.067	4.0	C. W. C.		+1.2	Colored distilled, acidity low.
20900		Kokomo	3.82							Low in acidity.
20903		Marion	3.88	1.860	0.245	24.0	Normal	Heavy	-0.4	Colored distilled, acidity low.
20918		Indianapolis	2.05	2.265	0.310	36.0				Low in acidity.
21004		Salem	3.96	1.555	0.285	30.0				Low in acidity.
21006		Salem	1.69	1.530	0.330	36.0				Low in acidity.
21008		Salem	1.97	1.165	0.305	36.0				Low in acidity.
21007		Salem	3.37							Low in acidity.
21034		Warsaw	3.78							Below standard in acidity.
21035		Warsaw	3.92	0.250	0.053	4.0	C. W. C.	None	+1.0	Below standard in acidity.
21060		Ft. Wayne	3.91	0.250	0.050	4.0	C. W. C.	None	+1.0	Is not a cider vinegar.
21061		Ft. Wayne	4.65	0.320	0.065	6.0	C. W. C.	None	+0.8	Colored distilled.
21057		Indianapolis	2.55	1.765	0.430	34.0	Normal	Heavy	+0.0	Low in acidity.
21228		Princeton								

DISTILLED VINEGAR.

Nine of the 13 distilled vinegars analyzed were legal. The four illegal samples were low in acidity.

DISTILLED VINEGAR—LEGAL.

Lab. No.	Manufacturer or Retailer.	Where Collected.	Acidity.	Solids.	Ash.	Alkalinity of Ash.	Color.	Lead Acetate Precipitate.	Polarization.
19094	J. W. Isor	Logansport.	5.17						
19319	M. L. Swayze	Marion.	4.05						
19670	Wayne Mfg. Co.	Ft. Wayne	5.38						
19870	Wayne Mfg. Co.	Ft. Wayne	4.54						
19872	Wayne Mfg. Co.	Ft. Wayne	5.55						
20066	C. A. Griffith Chem. Co.	Indianapolis	4.78						
20883	Grocers Supply Co.	Indianapolis	9.6						
21194	Clancy Bros.	Logansport.	4.00						
21293	Mullen-Blackledge-Nellis	Brazil	9.35						

DISTILLED VINEGAR—ILLEGAL.

Lab. No.	Manufacturer or Retailer.	Where Collected.	Acidity.	Solids.	Ash.	Alkalinity of Ash.	Color.	Lead Acetate Precipitate.	Polarization.	Remarks.
20733	H. K. Bisey	Indianapolis.	2.50	.295	.026	3.0	C. W. C.	None.	+0.8	Acidity very low.
20984		Indianapolis.	3.825							Low in acidity.
20985		Indianapolis.	3.81							Low in acidity.
20067		Indianapolis.	3.74							Low in acidity.

SPIRITOUS LIQUORS.

WHISKEY.

Thirteen of the 18 samples of whiskey analyzed were legal. Five were illegal in that the alcohol content was low, poisons being present, and the extract content was far higher than that of a normal whiskey.

WHISKEY—LEGAL.

Lab. No.	Manufacturer or Retailer.	Specific Gravity at 20° C.	Per Cent. Alcohol by Weight.	Per Cent. Alcohol by Volume.	Extract.
19257	Keith & Co., Terre Haute.....	.9315	41.86	49.35	.4260
19258	D. Goldman, Terre Haute.....	.9410	37.11	44.20	.0028
19264	D. Goldman, Terre Haute.....	.9391	39.17	46.45	.1260
19268	Federal Liquor Co., Terre Haute.....				
19270	D. Goldman, Terre Haute.....	.9400	37.62	44.75	.1080
19518	Sam Rosenbaum, Terre Haute.....	.9272	43.8	51.5	.057
19525	Sam Rosenbaum, Terre Haute.....	.9384	38.4	45.6	.132
19526	Sam Rosenbaum, Terre Haute.....	.9275	43.8	51.5	.072
19645	Sent in from St. Paul, Ind.....	.9297	44.4	52.0	.1372
19931	Jas. B. Falconberry, Plymouth.....			50.6	
20281	Chas. Leich & Co., Evansville.....				
20965	E. T. Pearson, Logansport.....	.9357		47.1	
21302	Sent in from Sullivan.....	.9360		46.9	

WHISKEY—ILLEGAL.

Lab. No.	Manufacturer or Retailer.	Specific Gravity at 20° C.	Per Cent. Alcohol by Weight.	Per Cent. Alcohol by Volume.	Extract.	Remarks.
19263	D. Goldman, Terre Haute.....	.9450	35.0	41.85	.1200	Not a whiskey.
19331	H. H. Klein, Indianapolis.....		6.4	7.97		Label is illegal.
19524	Sam Rosenbaum, Terre Haute.....	.9450	35.0	41.8	12.6	Illegal.
19527	Sam Rosenbaum, Terre Haute.....	.9403	37.4	44.5	.250	Sample is colored with caramel.
20634	Sent in from Mt. Vernon.....					Cyanide present.

BRANDY.

Six of the nine samples of brandy examined were illegal, due either to the presence of less alcohol than that required, or the use of a misleading label.

BRANDY—LEGAL.

Lab. No.	Manufacturer or Retailer.	Specific Gravity at 20° C.	Per Cent. Alcohol by Weight.	Per Cent. Alcohol by Volume.	Extract.	Remarks.
19261	D. Goldman, Terre Haute.....		35.2	42.06		
19328	S. Koby, Indianapolis.....		34.5	41.28		
19531	Sam Rosenbaum, Terre Haute..	.9258	44.5	52.2	0.14	

BRANDY—ILLEGAL.

19519	Sent in from Terre Haute.....	.9495	32.5	39.0	.060	
19520	Sent in from Terre Haute.....	1.1068	12.2	15.1	35.78	Does not contain honey.
19521	Sent in from Terre Haute.....	.9602	32.1	38.5	.032	
19522	Sent in from Terre Haute.....	.9498	32.3	39.8	.060	
19528	Sent in from Terre Haute.....	.9497	32.4	38.9	.027	
19533	Sent in from Terre Haute.....	.9350	40.1	47.4	1.412	Is not genuine brandy and is sweetened.

WINES.

Six of the 15 wines examined were illegal. One sample contained saccharin, and the others were, for the most part, misbranded, alleging blackberry wine, when, as a matter of fact, they were imitation products.

WINES—LEGAL.

Lab. No.	Manufacturer or Retailer.	Specific Gravity at 20° C.	Per Cent. Alcohol by Weight.	Per Cent. Alcohol by Volume.	Extract.	Remarks.
19253	D. Goldman, Terre Haute.....		11.1	13.74		Color natural.
19260	D. Goldman, Terre Haute.....		15.2	18.71		Color natural.
19262	D. Goldman, Terre Haute.....		15.8	19.44		Color natural.
19267	D. Goldman, Terre Haute.....		14.9	18.35		Color natural.
19329	S. Koby, Indianapolis.....		5.1	6.37		
19523	Sam Rosenbaum, Terre Haute..	1.0197	16.8	20.65	11.2512	
19712	Samuel Levin, Hammond.....		14.1	17.38		Color natural.
20237	Soldiers' Home, Lafayette.....	.9746	15.9	19.55		
20238	Soldiers' Home, Lafayette.....	.9783	12.0	14.85		

WINES—ILLEGAL.

19265	D. Goldman, Terre Haute.....		6.7	8.34		Not a blackberry.
19330	S. Koby, Indianapolis.....		7.4	9.20		Not a blackberry wine.
19529	Sam Rosenbaum, Terre Haute..	1.0832	7.1	8.85	24.02	Saccharin present, artificial color.
19530	Sam Rosenbaum, Terre Haute..	1.0748	19.0	23.30	0.132	Artificially flavored.
19713	Samuel Levin, Hammond.....		21.3	26.02		Not a banana cortical.
20236	Sent in from Lafayette.....	.9906	3.9	4.90		Not genuine.

MALT PRODUCTS.

BEERS.

Ten beers sent in for analysis were examined, and all found to be legal.

BEERS.

Lab. No.	Manufacturer or Retailer.	ALCOHOL.		Extract.	Remarks.
		By Weight.	By Volume.		
19236	Sent in from Muncie.....	3.7	4.6	5.73	Legal.
19658	Sent in from Muncie.....	3.76	4.7	5.22	Legal.
19659	Sent in from Muncie.....	3.76	4.7	5.22	Legal.
19660	Sent in from Muncie.....	3.76	4.7	5.27	Legal.
19929	Sent in from Plymouth.....	3.12	3.9	.....	Legal.
19930	Sent in from Plymouth.....	3.04	3.8	.....	Legal.
19932	Sent in from Plymouth.....	3.92	4.9	.....	Legal.
19933	Sent in from Plymouth.....	4.08	5.1	.....	Legal.
19934	Sent in from Plymouth.....	3.84	4.8	.....	Legal.
21295	Sent in from Bicknell.....	3.96	4.9	.....	Legal.

TEMPERANCE BEERS.

Of the 28 temperance beers examined, 16 were illegal in that they were not temperance beers at all but products bearing some false label alleging low alcohol content.

TEMPERANCE BEERS.

Lab. No.	Article.	Manufacturer.	ALCOHOL.		Remarks.
			By Weight.	By Volume.	
19395	Hop Cream.....	C. T. Ogren, Chicago.....	2.39	3.0	Alcohol volume too high.
19395	Hop Cream.....	C. T. Ogren, Chicago.....	2.39	3.0	Alcohol volume too high.
19459	Ambrosia.....	Frank Fehr Brewing Co., Louisville, Ky.....	1.43	1.8	Alcohol high.
19776	Tonic Beer.....	Sent in from Muncie.....	3.40	4.25	Alcohol high; illegal.
19862	Tonica.....	Sent in from Goshen.....	0.0	0.0	Legal.
19864	Nectarine.....	Sent in from Goshen.....	3.36	4.2	Regular beer; illegal.
19865	Temperance Beer.....	Sent in from Goshen.....	None.	None.	Legal.
20060	Tonica.....	Sent in from Angola.....	None.	None.	Legal.
20061	Tonica.....	Sent in from Angola.....	None.	None.	Legal.
20342	Temperance Beer.....	C. T. Ogren Co., Chicago.....	.42	0.52	Legal.
20343	Tonica.....	Sent in from Columbia City.....	0.0	0.0	Legal.
20344	Tonica.....	Sent in from Columbia City.....	0.0	0.0	Legal.
20627	Temperance Beer.....	Sent in from Indianapolis.....	None.	None.	Legal.
20686	Temperance Beer.....	Sent in from Indianapolis.....	2.00	2.51	Misbranded; illegal.
20687	Temperance Beer.....	Sent in from Indianapolis.....	2.00	2.51	Misbranded; illegal.
20687	Temperance Beer.....	Sent in from Wolcott.....	2.19	2.7	Illegal.
20688	Temperance Beer.....	Sent in from Wolcott.....	2.25	2.8	Illegal.
20689	Temperance Beer.....	Sent in from Columbia City.....	0.14	0.17	Legal.
20870	Temperance Beer.....	Sent in from Columbia City.....	0.14	0.17	Legal.
20891	Hop Tonic.....	Sent in from Indianapolis.....	2.79	3.5	Illegal.
21241	Dry Beer.....	Sent in from Bicknell.....	4.00	5.0	Misbranded; illegal.
21242	Dry Beer.....	Sent in from Bicknell.....	.35	0.44	Legal.
21258	Temperance Beer.....	Sent in from Monon.....	3.84	4.8	Misbranded; illegal.
21294	Dry Beer.....	Sent in from Bicknell.....	.14	0.17	Legal.
21301	Malthale.....	Sent in from Bicknell.....	3.28	4.1	A straight beer.
21326	Temperance Beer.....	Sent in from Monon.....	0.71	0.9	Illegal.
21327	Temperance Beer.....	Sent in from Monon.....	4.40	5.5	Not temperance beer.
21358	Temperance Beer.....	Sent in from Bicknell.....	3.44	4.3	Not a temperance beer.

VEGETABLES—CANNED.

Thirty-five samples of canned vegetables were examined to determine the character of tomato sauce used in the preparation of the product. All of these samples were canned beans. For the most part the sauce used was of acceptable character, although several samples showed the presence of many yeasts. A number of samples also showed more mould filaments and spores than should be found in a satisfactory sauce.

CANNED VEGETABLES.

Lab. No.	Article.	Where Collected.	Result of Analysis.
19868	Beans	Indianapolis	Moulds and yeast present.
19869	Beans	Indianapolis	Moulds and yeast present.
19897	Beans	Indianapolis	Moulds present; illegal.
19901	Beans	Indianapolis	Free from moulds; very juicy.
19902	Beans	Indianapolis	Moulds scarce.
19903	Beans	Indianapolis	Very little mould present.
19907	Beans	Indianapolis	Some moulds.
19906	Beans	Indianapolis	Very little mould.
19909	Beans	Indianapolis	Little mould.
19910	Beans	Indianapolis	Little mould.
19912	Beans	Indianapolis	Little mould.
19913	Beans	Indianapolis	Little mould.
19914	Beans	Indianapolis	Little mould.
19915	Beans	Indianapolis	Very little mould.
19916	Beans	Indianapolis	Some moulds and yeast.
19917	Beans	Indianapolis	Some moulds present.
19918	Beans	Indianapolis	Some moulds and yeast present.
19921	Beans	Indianapolis	Few moulds present; yeasts present.
19922	Beans	Indianapolis	Few moulds present.
19923	Beans	Indianapolis	Few moulds.
19924	Beans	Indianapolis	Some moulds present; yeasts present.
19925	Beans	Indianapolis	Few moulds; yeasts present.
19947	Beans	Indianapolis	Very few moulds; yeasts present.
19952	Beans	Indianapolis	Some moulds present.
19953	Beans	Indianapolis	Much mould present.
19977	Beans	Indianapolis	Few moulds and yeast present.
19978	Beans	Indianapolis	Some yeasts; very few moulds.
19979	Beans	Indianapolis	Some yeasts; very few moulds.
19982	Beans	Indianapolis	Much mould and yeast cells.
19983	Beans	Indianapolis	Some moulds; few yeasts.
19984	Beans	Indianapolis	Few moulds; yeasts present.
19996	Beans	Indianapolis	Many yeasts; few moulds.
19997	Beans	Indianapolis	Few moulds; yeasts present.
20001	Lentils	Indianapolis	Few moulds and yeasts.
20581	Beans	Made in Pittsburgh, Pa.	Free from moulds; few yeast cells present.

MISCELLANEOUS FOOD PRODUCTS.

Forty samples of miscellaneous food products were analyzed during the year. This list includes a great variety of articles. A very few samples were classed as illegal. Several samples of ripe olives were found to be wormy and rotten. A sample of gelatin contained colon bacilli. A sample of coffee was found to be adulterated with chicory. Most of these samples were sent in by persons who suspected their quality of purity. The fact that in almost every instance nothing injurious was found, is a sufficient

comment upon the worthlessness of the analytical data obtained by the analysis of samples brought in by suspicious purchasers.

MISCELLANEOUS FOOD PRODUCTS.

Lab. No.	Manufacturer or Retailer.	Where Collected.	Name of Article.	Remarks.
13633	Fawley & Holdermann	Winamac	Butter Color	No coal tar color.
15082	L. Ebrod	Paoli	Vanilla Pudding	Legal.
16285	McCaffrey Co.	Peru	Protoid Nuts	Legal.
16288	McCaffrey Co.	Peru	Butter Color	Legal.
19002	Bickel & Baker	Goshen	Canning Compound	Legal.
19115	Jas. Burkhardt	Indianapolis	Mince Meat Pie	Contains no benzoate.
19167	Columbia Con. Co.	Columbus	Vinegar Preservative	Spice oils present.
19172	Sent in from Gaston	Gaston	Preserving Comp	Acetic extract of spices.
19204	Sent in from	Indianapolis	Dekafa	Caffeine 0.23%.
19307	Sent in from	Indianapolis	Cream Roll	Nothing injurious found.
19323	Sent in from	Daleville	Konut Oil	Pure coconut oil.
19572	Sent in from	Westville	Health Food	No irritant present.
19646	Sent in from	Indianapolis	Mixed nuts	Legal.
19784	Sent in from	Greentown	Horseradiab	No turnip present.
19830	Sent in from	Vincennes	Tobacco	
19880	Sent in from	Attica	Horseradiab	No turnip tissue or starch.
19945	Sent in from	Rensselaer	Corn starch	No foreign materials present.
19946			Buttermilk	Satisfactory.
19955	L. A. Barbaugh	Goshen	Seagards	No borax, meat edible.
19956	L. A. Barbaugh	Goshen	Chicken Tamale	No borax.
20018	Sent in from	Indianapolis	Crackered Wheat	No glass present.
20075	Sent in from	Cayuga	Corn meal	Legal.
20150	Sent in from	West Lafayette	Seal Salt	Borax present.
20226	Sent in from	South Bend	Preservative	No borax or sulphites.
20348	Sent in from	Indianapolis	Milk fat	Legal.
20506	Sent in from	Indianapolis	Olives	Rotten and wormy.
20507	Sent in from	Indianapolis	Olives	Rotten and wormy.
20508	Sent in from	Indianapolis	Olives	Rotten and wormy.
20539	M. S. Burger	Clay City	Powdered sugar	Legal.
20553	Sent in from	Linton	Pie	Legal.
20565	D. B. Martin & Son	Bloomington	Gelatine	B. Coli present.
20567	Sent in from	Seymour	Preservative	Legal.
20597	Sent in from	Lebanon	Ice Cream Powder	Contains starch.
20714	Wm. A. Painter	Indianapolis	Cones	Legal.
20739	Wm. A. Painter	Indianapolis	Cones	Legal.
20740	Wm. A. Painter	Indianapolis	Cones	Legal.
20862	Sent in from	Indianapolis	Soap	Legal.
20949	Sent in from	Kendallville	Bread	Sample contains black bread mould and pink mould.
20487	Sent in from	Auburn	Coffee	Nothing that cause sickness.
21225	Sent in from	Terre Haute	Coffee	Illegal.

PREPARED MUSTARD.

Lab. No.	Manufacturer.	Address.	Remarks.
19110			Illegal, adulterated with starch.
19364	Hulman & Co.	Terre Haute	Legal.
19366	J. B. Bright & Son	Indianapolis	Legal.

PICKLES.

Lab. No.	Manufacturers Name.	Address.	Remarks.
20069	Sent in from	Cincinnati, O.	Sample is legal.
20070	Sent in from	Detroit, Mich.	Sodium benzoate present. Illegal.
20072	Sent in from	Chicago, Ill.	Sodium benzoate present. Illegal.
20074	Sent in from	Cincinnati, O.	Sodium benzoate present. Illegal.

CREAM OF TARTER.

Lab. No.	Manufacturer or Retailer.	Address.	Per Cent. of Purity.
19750	Hammond & Pasquire.....	Indianapolis.....	98.6 Potassium bitartrate.

BAKING POWDER.

Lab. No.	Manufacturer or Retailer.	Address.	Remarks.
20224	Augustine Bros.....	Westville.....	Available CO ₂ 12.94%.
20656	Sent in by Inspector.....		No arsenic by Marsh test.

SODAS AND SUMMER DRINKS.

Twenty-two of the 58 sodas and summer drinks examined were classed as illegal either because of the presence of saccharin or benzoate of soda. In one case a grape juice contained salicylic acid. These preparations are, for the most part, properly labeled and free from preservatives.

SODAS—LEGAL.

Lab. No.	Manufacturer or Retailer.	Brand.	Preservative or Artificial Sweetener.
19396	H. R. Havens, Valparaiso.....	Artificial Grape	None.
19397	A. R. Havens, Valparaiso.....	Cream Soda	None.
19413	Limri Atkinson, Attica.....	Mexican Hot	None.
19414	T. A. Brant, Attica.....	Blood of the Grape.	None.
19420	Leimgruber & Scheidler, Attica.....	Bottled Pop.	None.
19421	Leimgruber & Scheidler, Attica.....	Summer Drink	None.
19422	Leimgruber & Scheidler, Attica.....	Summer Drink	None.
19423	Leimgruber & Scheidler, Attica.....	Summer Drink	None.
19424	Leimgruber & Scheidler, Attica.....	Summer Drink	None.
19461	Chas. J. Kinsey, Columbus.....	Cream Soda	None.
19462	Chas. J. Kinsey, Columbus.....	Lemon Soda	None.
19463	Chas. J. Kinsey, Columbus.....	Blood Orange	None.
19464	Chas. J. Kinsey, Columbus.....	Lemon Sour	None.
19465	Milo Ports, Columbus.....	Orchade	None.
19816	A. L. Seltzer, Indianapolis.....	White Soda	None.
19817	A. L. Seltzer, Indianapolis.....	Lemon Soda	None.
19844	Crown Cordial Co., New York.....	Crushed Fruit	Artificially colored but properly labeled
20234	Sent in from North Vernon.....	Summer Drink	
20352	D. C. Bowser, Elwood.....	Iron Brew	No preservatives.
20353	Phillip Mann, Elwood.....	White Soda	No preservatives.
20354	Phillip Mann, Elwood.....	Ginger Ale	No preservatives.
20356	Pat. Bradley, Elwood.....	White Soda	No preservatives.
20357	Pat. Bradley, Elwood.....	Iron Brew	No preservatives.
20600	Banbiff & Co., Hammond.....	Soda-Fruit	No preservatives.
20584		Root Beer	No preservatives.
20607	Perry D. Ferguson, Connersville.....	Red Soda	No preservatives.
20609	Perry D. Ferguson, Connersville.....	White Soda	No preservatives.
20611	C. F. Wilt, Shirley.....	Orchade	Sweetened and artificially colored but properly labeled.
20612	C. F. Wilt, Shirley.....	Sarsaparilla	No preservative.
20664	Paw Paw Grape Juice Co., Paw Paw, Michigan.....	Grape Juice	No preservative.
20685	Geiger Tinney Co., Indianapolis.....	Phosphate	No preservative.
20737	T. N. Heines, Indianapolis.....	Strawberry Crushed Fruit	No preservative.
20738	T. N. Heines, Indianapolis.....	Pine Apple	No preservative.
21288	D. F. Wilson, Brasil.....	Strawberry Pop	No preservative.
21289	D. F. Wilson, Brasil.....	Orange Pop	No preservative.
21290	D. F. Wilson, Brasil.....	Lemon Pop	No preservative.

SODAS—ILLEGAL.

Lab. No.	Manufacturer or Dealer.	Brand.	Preservatives.		
			Saccharin.	Benzoate of Soda.	Salicylic Acid.
19374	A. J. Dante, Washington	Strawberry	Present	None	None
19375	A. J. Dante, Washington	Lemon Sour	Present	None	None
19377	A. J. Dante, Washington	Red Rock	None	Present	None
19408	Pan Cola Co., Chicago	Pan Cola	None	Present	None
19477	Red Cross Cider Co., St. Louis	Juni	None	Present	None
19555	Sent in from Washington	Ginger Ale	None	Present	None
*19670	Sample sent in from Vincennes	Soft Drink	None	None	None
19812	Indiana Bottling Co., Indianapolis	White Soda	Present	None	None
*19813	Indiana Bottling Co., Indianapolis	Lemon Soda	None	None	None
*19814	Indiana Bottling Co., Indianapolis	Red Soda	Present	None	None
19815	Indiana Bottling Co., Indianapolis	Cream Soda	Present	None	None
19886	Red Cross, St. Louis	Juni	None	Present	None
19998	Indiana Bottling Co., Indianapolis	White Soda	Present	None	None
19999	Indiana Bottling Co., Indianapolis	White Soda	Present	None	None
20000	Indiana Bottling Co., Indianapolis	White Soda	Present	None	None
*20355	Phillip Mann, Elwood	Red Soda	None	None	None
20561	Sent in from Indianapolis	Malto-Grape	None	None	Present.
*20608	Perry D. Ferguson, Evansville	Red Soda	None	None	None
*20610	C. F. Wiltz, Shirley	Red Soda	None	None	None
*20630	S. S. Kreege, Indianapolis	Orangeade	None	None	None
*20700	A. Jefferies, Union City	Strawberry Pop	None	None	None
*20701	A. Jefferies, Union City	Cream Soda	None	None	None

*Artificially colored and not so stated on label of bottle.

SPICES.

But 16 samples of spices were analyzed during the year, and in only two instances was there any evidence of adulteration. One sample of ground cloves contained cocoanut shells, and another a very small quantity of cocoanut shells possibly added through the use of a bin which, in previous years, had contained adulterated spices.

SPICES—MISCELLANEOUS.

Lab. No.	Name and Address of Dealer.	Classification.	Remarks.
18456	Noah E. Carpenter, Freedom	Black Pepper	Legal.
19246	A. W. Osterhage, Terre Haute	Ground Cloves	Legal.
19247	A. W. Osterhage, Terre Haute	Ground Nutmeg	Legal.
19252	A. & P. Tea Co., Terre Haute	Black Pepper	Legal.
19253	A. & P. Tea Co., Terre Haute	Ground Cloves	Slight admixture of cocoanut shell.
19254	A. & P. Tea Co., Terre Haute	Ground Cinnamon	Legal.
19365	Louis Keller, Washington	Ginger	Legal.
19367	Louis Keller, Washington	Pepper	Legal.
19368	Louis Keller, Washington	Red Pepper	Legal.
19369	H. F. Volmer Grocery Co., Washington	Pepper	Legal.
19370	H. F. Volmer Grocery Co., Washington	Cloves	Legal.
19371	H. F. Volmer Grocery Co., Washington	Allspice	Legal.
19401	Berj. Crothers, Arco	Ground Cloves	Ground cocoanut shells present.
19469	Frank M. Hall, Youngstown	Pepper	Legal.
21226	Frank M. Hall, Youngstown	Ground Mustard	Legal.
21227	Frank M. Hall, Youngstown	Pepper	Legal.

DRUGS.

During the past year the work of the drug laboratory has been confined more largely than heretofore to special work, much of which has been done for the convenience of physicians and pharmacists. The analysis of unknown samples of unlabeled drugs is tedious and difficult, and the results obtained are frequently unprofitable. This work, however, is increasingly demanded, and, while the laboratory can not be thrown open to everyone who wishes an unknown drug examined, it is our desire to place it at the disposal of physicians who can make intelligent use of the results obtained.

During the year 365 samples of drugs have been analyzed, of which 209 were pure and properly labeled and 156, or 42.7 per cent., illegal. Many of the illegal samples were so reported because of the failure to declare the alcohol or narcotic content, as required by the Pure Drug Law. These omissions, although of an entirely different character, are just as palpable violations of the law as the use of inferior drugs, and have been sufficiently numerous as to decidedly increase the percentage of adulterated samples. So far as the chemical composition of the drugs examined goes, the percentage of adulteration by reason of the use of substitutes and the failure to comply to the pharmaceutical standard is much less than in previous years.

The druggist who dispenses medicines for the cure of disease, either at the request of the purchaser or upon physician's prescription, is supposed to be carefully trained, alert and of sound judgment. The patient is bound to rely upon the prescription clerk and druggist when he purchases drugs and medicines. The responsibility of the dealer is very great and fully appreciated by the educated pharmacist, but mistakes do occur, sometimes with no ill results, but far too frequently to the grave detriment of the health of the patient.

During the last two or three years many instances of such mistakes have been noted at this laboratory. Samples of well-known tinctures sold the food and drug inspectors and labeled by the clerk, presumably with special care, have been entirely different from the prescription. A sample labeled tincture of iodine proved to be tincture of iron. A sample labeled tincture of iron, upon analysis, was found to be tincture of iodine. A sample sold as citric acid was oxalic acid. Another sample purchased as borax was, in fact, potassium chlorate. A sample labeled potassium cyanide was,

in fact, potassium ferro cyanide. A sample sent to the laboratory as gin proved to be methyl alcohol. Morphine tablets, upon analysis, were found to contain strychnine. A sample of plaster paris was a mixture of calcium sulphate, calcium carbonate and calcium oxide. Two samples of epsom salts were, in fact, potassium nitrate, and tablets sold as a cathartic were morphine tablets.

Some of these mistakes or errors were innocent and free from danger; others were deadly, and in two instances death resulted from the error of the clerk. In view of the possibility of the substitution of drugs of similar appearance it is incumbent upon the profession to demand still greater care by their clerks in the handling of all drug supplies. I believe a greater margin of safety might be provided by requiring that all preparations which are known to be poisonous in the normal dose should be kept in a special closet under lock and key, and that the registered pharmacist in charge of the store should alone be intrusted with the key. Under this condition it would be impossible to sell oxalic acid for citric acid or methyl alcohol for gin.

The list given below should be a fair warning to all pharmacists of the danger inherent in their profession and an incentive to added care and watchfulness. Mistakes may be excusable in some lines of work, but a mistake at the drug store is too dangerous to be tolerated, and the conditions which induced it should be eliminated from the business.

Lab. No.	Sold for	Found to be
1924-E	Citric acid.....	Oxalic acid.
2724-B	Salts.....	Mixture of salts and alum.
3001-B	Potassium cyanide.....	Potassium ferro cyanide.
3694-B	Borax.....	Potassium chlorate.
4653-B	Sweet spirits nitre.....	Compound spirits ether.
5532-B	Gin.....	Methyl alcohol.
5545-B	Morphine tablets.....	Strychnine.
5555-B	Plaster Paris.....	Mixture of calcium sulphate, calcium carbonate and calcium oxide
5548-B	Epsom salts.....	Potassium nitrate.
5551-B	Cathartic pills.....	Morphine tablets.
5559-B	Epsom salts.....	Potassium nitrate.
	Tincture iron.....	Tincture iodine.
	Tincture iodine.....	Tincture iron.

RESULT OF ANALYSES OF DRUG SAMPLES.

ARTICLE EXAMINED.	Legal.	Illegal.	Total.	Per Cent. Adulterated.
Acids—				
Hydrochloric.....	2	1	3	33.3
Sulphuric.....	0	1	1	100.0
Aromatic cordial.....	1	0	1	0.0
Alum.....	1	0	1	0.0
Asthma cure.....	0	1	1	100.0
Asthma cigarette.....	1	0	1	0.0
Alcohol.....	7	0	7	0.0
Bismuth subnitrate.....	1	0	1	0.0
Bay rum.....	1	1	2	50.0
Beverage (for poison).....	1	0	1	0.0
Cream of tartar.....	1	0	1	0.0
Catarrh remedy.....	1	0	1	0.0
Cocaine hydrochloride.....	0	5	5	100.0
Castoria.....	1	0	1	0.0
Datura.....	0	1	1	100.0
Drug.....	1	0	1	0.0
Epsom salts.....	2	2	4	50.0
Extract of witchhazel.....	8	0	8	0.0
Fluid Extracts—				
Ginger—Soluble.....	1	0	1	0.0
Sarsaparilla compound.....	1	0	1	0.0
Squill compound.....	1	0	1	0.0
Stillingia compound.....	1	0	1	0.0
Glycerin.....	3	1	4	25.0
Hydrogen peroxide.....	24	16	40	40.0
Hog cholera antitoxin.....	1	1	2	100.0
Hog cholera powder.....	1	0	1	0.0
Headache powders.....	2	0	2	0.0
Junket cream tablets.....	1	0	1	0.0
Lilly's lime.....	1	0	1	0.0
Miscellaneous samples.....	5	3	8	37.5
Metal polish.....	1	0	1	0.0
Oil—				
Linseed.....	6	5	11	45.4
Almond.....	1	0	1	0.0
Olive.....	16	0	22	27.3
Castor.....	1	0	1	0.0
Turpentine.....	1	3	4	75.0
Cedar.....	1	0	1	0.0
Miscellaneous.....	1	0	1	0.0
Paregoric.....	17	4	21	19.0
Plaster of Paris.....	1	0	1	0.0
Quinine hair tonic.....	1	0	1	0.0
Restorative and tonic.....	1	0	1	0.0
Rose water.....	1	0	1	0.0
Remedy for epilepsy.....	1	0	1	0.0
Spirits—				
Nitrous ether.....	0	10	10	100.0
Wintergreen.....	0	1	1	100.0
Camphor.....	21	41	62	66.1
Peppermint.....	6	17	23	73.9
Sodium carbonate.....	1	0	1	0.0
Salt.....	1	0	1	0.0
Syrup—Simple.....	1	1	2	50.0
Syrup—Iodide of iron.....	2	0	2	0.0
Sulphur—Flowers of.....	3	0	3	0.0
Tablets or Capsules—				
Morphine sulphate.....	0	2	2	100.0
Quinine sulphate.....	4	0	4	0.0
Calcium sulphide.....	2	0	2	0.0
Miscellaneous.....	8	0	8	0.0
Tinctures—				
Ginger.....	3	3	6	50.0
Iodine.....	12	15	27	55.5
Iron.....	7	13	20	65.0
Arnica.....	1	3	4	75.0
Opium.....	6	2	8	25.0
Opium—Deodorized.....	4	0	4	0.0
Tobacco.....	1	0	1	0.0
Teething powder.....	1	0	1	0.0
Wax—				
White.....	1	0	1	0.0
Yellow.....	1	0	1	0.0
Totals.....	206	159	365	43.5

ALCOHOL.

Seven samples of alcohol were analyzed during the year, all of which were classed as legal. In one instance the furfural content was much higher than it should have been, and the solids content was also high.

ALCOHOL—LEGAL.

Lab. No.	Manufacturer or Dealer.	Specific Gravity 20°C.	Per Cent. Alcohol by Vol.	Solids Mg. per 50 c.c.	Acidity C.C. $\frac{n}{10}$ KOH per 50 c.c.	Remarks.
20314	Percy L. Davis, Corydon.....	.8122	94.8	1.9	0.2	Furfural trace.
20316	L. S. Reiley, Corydon.....	.8130	94.6	2.1	0.3	Furfural present.
20380	J. L. Graham, Riley.....	.8164	93.3	6.2	0.3	Furfural marked amount.
20383	G. W. Dalton, Coal City.....	.8130	93.7	0.5	0.2	Furfural none.
20426	E. H. Bindley & Co., Terre Haute	.8121	94.8	2.1	0.2	Furfural trace.
20536	Hargrove & Millin, Rushville.....	.8184	93.2	1.6	0.4	Furfural trace.
21138	Gaylord & Baumbauer, Wabash....	.8137	94.4	1.3	0.2	Furfural trace.

COCAINAE HYDROCHLORIDUM.

Cocaine Hydrochloride.

Five samples of cocaine hydrochloride, either purchased by inspectors or sent in by interested parties, were analyzed during the year. In every case the samples, upon analyses, were identified as cocaine hydrochloride, which had been sold in violation both of the food and drug law requiring the statement of cocaine content, and of the pharmacy law which prohibits the sale of cocaine and its salts except under certain restrictions.

COCAINE HYDROCHLORIDE.

(Sold in violation of law.)

Lab. No.	Manufacturer or Dealer.	Cocaine as Anhydrous Alkaloid. Per Cent.	Cocaine as Cocaine Hydrochloride. Per Cent.	Remarks.
20982	Sent in from Terre Haute.....	77.2	86.5	Identified as cocaine hydrochloride.
21298	Bought of Rigrish Drug Co., Indianapolis.....	84.4	94.5	Identified as cocaine hydrochloride.
21324	Sent in from Indianapolis.....	83.0	92.9	Identified as cocaine hydrochloride.
21468	Bought of Rigrish Drug Co., Indianapolis.....	.....	.....	Identified as cocaine hydrochloride.
21469	Bought of Rigrish Drug Co., Indianapolis.....	.....	.....	Identified as cocaine hydrochloride.

OLEUM LINI.

Linseed Oil.

Eleven samples of linseed oil, all of which were sent into the laboratory, were analyzed during the year. Five of the eleven samples were illegal in that they were not pure oils. Four of the

five illegal samples were adulterated with mineral oils, and the fifth sample with a foreign seed oil. It is very apparent that linseed oils are subject to adulteration, and that much of the oil used by painters and sold by supply houses is illegal. This condition is the more surprising because of the fact that the sale of impure oil is prohibited both by the drug law and a special linseed oil law.

LINSEED OIL—LEGAL.

Lab. No.	Manufacturer or Retailer.	Specific Gravity at 20°C.	Refractive Index.	Saponification Value.	Unsaponifiable Matter.	Iodine Value.	Hexabromides.
20401	Sent in from Indianapolis.....	.9227	1.4752	193.5	2.13%		
20715	W. T. Bowles, Bloomington....	.9370	1.4842	191.5			
20858	Sent in from Indianapolis.....	.9310	1.4805	190.2			
20859	Sent in from Indianapolis.....	.9313	1.4810	192.8			
20861	Sent in from Indianapolis.....	.9285	1.4790	192.3		171.9	28.5%
21039	Sent in from Indianapolis.....	.9287	1.4792	189.9			

LINSEED OIL—ILLEGAL.

Lab. No.	Manufacturer or Dealer.	Specific Gravity at 20°C.	Refractive Index.	Saponification Value.	Unsaponifiable Matter.	Remarks.
19324	Sent in from New Palestine....	.9158	1.4772	169.5	10.9%	Adulterated with mineral oil.
20856	Sent in from Charlottesville....	.8937	1.4750	108.6	36.8	Adulterated with mineral oil.
20860	Sent in from Indianapolis.....	.8943	1.4755	107.6	37.2	Adulterated with mineral oil.
20874	Sent in from Indianapolis.....	.9230	1.475	189.9	.....	Adulterated with foreign seed oil.
21512	Sent in from Berne.....	.9245	1.4815	161.2	11.3	Adulterated with mineral oil.

*Iodine Value=126.9; Hexabromides=1.8%.

SPIRITUS MENTHÆ PIPERITÆ.

Essence Peppermint.

Of the 23 samples of essence of peppermint analyzed 17 were illegal. Thirteen of the 17 illegal samples were so classed because the oil content was less than the amount required. The other sample was declared illegal because the alcohol content was not declared on the label.

ESSENCE PEPPERMINT—LEGAL.

Lab. No.	Manufacturer or Dealer.	Per Cent. Oil by Volume.	Per Cent. U. S. P.	Specific Gravity at 20°C.	Per Cent. Alcohol by Vol.
18786	Adams & Joyce, New Bethel.....			.8405	86.5
20528	Crouse Drug Co., Anderson.....	10.0	100	.8222	85.1
20530	Central Pharmacy, Anderson.....	11.6	116	.8233	83.6
20545	A. C. Pilkenton, Greenfield.....	10.4	104	.8249	84.1
20571	R. W. Burton, Shelbyville.....	10.4	104	.8214	85.0
20573	Morrison & Depres, Shelbyville.....	9.2	92	.8275	84.2
20690	A. F. Sala, Winchester.....	9.8	98	.8220	85.3
20694	W. W. Reed, Winchester.....	10.0	100	.8253	84.3
20695	J. H. White, Winchester.....	9.8	98	.8228	85.1

ESSENCE PEPPERMINT—ILLEGAL.

Lab. No.	Manufacturer or Dealer.	Per Cent. Oil by Volume.	Per Cent. U. S. P.	Specific Gravity at 20°C.	Per Cent. Alcohol by Vol.	Remarks.
20161	R. L. Stone, Albion.....	4.8	48	.8193	89.3	Below standard in oil.
20168	M. C. Beck, Albion.....	8.4	84	.8228	85.8	Below standard in oil.
20180	Clark & Smith, Garrett.....	6.0	60	.8838	64.9	Below standard in oil.
20637	Eugene Brickley, Anderson.....	9.8	98	.8223	85.2	Alcohol not declared.
20639	Anderson Drug Co., Anderson.....	9.8	98	.8225	85.1	Below standard in oil.
20631	Cassell Brothers, Anderson.....	9.8	98	.8218	85.3	Alcohol not declared.
20646	M. C. Quigley, Greenfield.....	9.4	94	.8243	85.0	Below standard in oil.
20647	V. Early, Greenfield.....	3.6	36	.8203	90.1	Below standard in oil.
20648	Levi J. Small, Carmel.....	12.2	122	.8299	81.1	Alcohol not declared on label.
20674	Doran & Means, Shelbyville.....	0.4	4	.9405	44.2	Below standard in oil.
20682	Sent in from Anderson.....	9.6	96	.8236	85.1	Below standard in oil.
20698	C. W. Eastman, Winchester.....	6.66	66	.8187	88.4	Below standard.
20703	N. S. Paul, Portland.....	6.2	62	.8254	86.9	Below standard in oil.
20704	A. A. Adair, Portland.....	10.0	100	.8279	84.9	Alcohol not declared.

SPIRITUS CAMPHORÆ.

Spirit of Camphor.

Of the 62 samples of spirit of camphor examined, 41, or 66 per cent., were illegal. Thirty of the 41 illegal samples were so classed because the gum camphor content was below the U. S. P. requirements. In two cases the camphor content was much higher than it should have been. Two samples contained methyl alcohol. It is difficult to understand why the percentage of adulteration of spirit of camphor continues high. The suggestion of former years that the preparation deteriorated even when made up full strength, has been shown to be incorrect. As a matter of fact, the camphor content constantly increases because of the concentration of the liquid. The chief source of error is evidently the careless clerk.

SPIRIT OF CAMPHOR—LEGAL.

Lab. No.	Manufacturer or Dealer.	Polarization 100 m.m. Tube.	Specific Gravity at 20°C.	Per Cent. U. S. P.	Per Cent. Alcohol by Vol.	Alcohol on Label.
18784	Adams & Joyce, New Bethel.....	15.1	.8335	125.8	79.7	86.0
18842	Henry M. Hollon, Petersburg.....	12.0	.8335	100.0	82.2	86.0
19378	Warren Van Tress, Washington.....	12.7	.8268	106.8	84.5	86.0
19402	Harvey T. Scha ff, Hillsboro.....	12.2	.8280	101.6	83.9	86.0
19405	Irwin & Willard, Covington.....	12.5	.8273	104.1	83.6	86.0
19458	Ambrose Mathis, Columbus.....	12.7	.8285	105.8	83.1	90.0
19551	B. F. Fendig, Rensselaer.....	12.5	.8305	104.1	82.8	86.0
19683	Gilbert L. Cary, Kingman.....	14.0	.8292	116.6	82.8	86.0
19686	C. F. Needy, Freedom.....	12.0	.8310	100.0	82.2	90.0
19699	Samuel W. Carpenter, Waveland.....	12.8	.8308	106.6	81.2	86.0
19759	L. L. Bryson, Nappanee.....	15.8	.8325	131.6	83.2	86.0
19818	Sent in from Rensselaer.....	15.2	.8358	126.6	82.8	86.0
20045	Otto Klopfer, Michigan City.....	12.0	.8268	100.0	86.1	86.0
20061	Ohming Drug Co., Michigan City.....	12.5	.8261	104.1	86.3	86.0
20166	M. C. Beck, Albion.....	12.4	.8272	103.3	85.9	86.0
20179	Clark & Smith, Garrett.....	13.0	.8280	108.3	85.2	86.0
20275	Chas. Leich & Co., Evansville.....	12.2	.8280	101.6	85.8	90.0
20514	S. D. Hill, Ewing.....	13.7	.8335	114.1	83.7	86.0
20560	R. M. Floyd, Shelbyville.....	12.7	.8322	105.8	84.7	86.0
21209	C. J. Kramer, Logansport.....	12.2	.8283	101.6	85.6	90.0
21229	Joseph Hagan.....	14.5	.8293	120.8	84.5	86.0

SPIRIT OF CAMPHOR—ILLEGAL.

Lab. No.	Manufacturer or Dealer.	Polar. 100m.m. Tube.	Specific Gravity at 20°C.	Per Cent. U.S.P.	Per Cent. Alcohol by Vol.	Alcohol on Label.	Remarks.
18621	Daniel Conoway, Cayuga...	12.8	.8290	106.6	82.8	.....	No alcohol stated on label.
18920	H. T. Graham, Fairland...	9.5	.8297	79.1	84.7	86.0	Below standard.
18922	H. A. Gladish, St. Paul...	7.0	.8242	58.3	85.8	86.0	Below standard.
19085	Chas. Kramer, Logansport...	1.2	.9678	10.0	30.4	.....	No alcohol stated on label.
19086	Chas. Kramer, Logansport...	1.2	.9678	10.0	30.4	.....	No alcohol stated on label.
19036	G. A. Marshall, Logansport...	10.1	.8838	84.1	64.0	86.0	Below standard.
19116	Geo. H. Boha on, Boonville...	10.4	.8258	86.6	84.7	86.0	Below standard.
19166	Fultz & Abehler, Newb rg...	9.4	.....	78.3	.....	.....	No alcohol stated on label.
19230	Rockwood Bros., Boeswell...	14.6	.8313	121.6	82.2	.....	No alcohol stated on label.
19279	Frank E. Hansen, Peru...	11.0	.8290	91.6	82.6	.....	No alcohol stated on label.
19296	D. O. Alber, Gramscreek...	10.9	.8277	90.8	85.0	.....	No alcohol stated on label.
19352	Peter Benz, Indianapolis...	12.1	.8318	100.8	81.3	.....	No alcohol stated on label.
19353	Peter Benz, Indianapolis...	11.6	.8287	96.6	82.6	.....	No alcohol stated on label.
19404	Thos. A. Summers, Hillsboro...	3.3	.8187	27.5	87.6	86.0	Below standard.
19472	F. W. Newton, Shelburne...	11.1	.8278	92.5	84.0	86.0	Below standard.
19476	F. Anierio, Carlisle...	14.4	.8333	120.0	81.2	.....	No alcohol stated on label.
19486	Peter Benz, Indianapolis...	11.8	.8287	98.3	79.3	.....	No alcohol stated on label.
19544	A. F. Long, Rensselaer...	11.1	.8290	92.5	84.0	86.0	Below standard.
19548	J. A. Larsh, Rensselaer...	5.0	.8237	41.6	85.8	86.0	Below standard.
19684	J. M. Cary, Kingman...	10.3	.8252	85.8	84.8	86.0	Below standard.
19767	J. Walters, Nappanee...	10.4	.8284	86.6	85.6	86.0	Below standard.
19769	C. W. Johnson, Nappanee...	7.6	.8975	63.3	60.0	86.0	Below standard.
19805	Geo. U. Geyer, Lafontaine...	10.5	.8256	87.5	85.8	86.0	Below standard.
19876	O. C. Bates, Bunkerhill...	5.5	.9155	45.8	56.0	86.0	Below standard.
20019	L. G. Kramer, Mich. City...	12.0	.8280	100.0	85.9	.....	No alcohol stated on label.
20041	Edw. Moran, Mich. City...	21.5	.8403	179.1	78.8	86.0	Camphor content too high.
20048	Woodson & Willets, Mich. City...	12.0	.8762	100.0	70.7	.....	No alcohol stated on label.
20159	B. E. Miller, Albion...	5.2	.902	41.3	61.9	70.0	Below standard.
20160	R. L. Stone, Albion...	3.9	.8180	32.5	91.7	91.0	Below standard.
20173	J. S. Patterson, Garrett...	19.0	.8733	158.3	69.7	86.0	Camphor content too high.
20182	A. F. Halter, Garrett...	11.4	.8295	95.0	85.7	86.0	Below standard.
20317	L. S. Fleishman, Corydon...	12.2	.8342	101.6	84.1	.....	No alcohol stated on label.
20319	John F. Gierling, Corydon...	11.5	.8523	95.8	79.0	86.0	Contains added water.
20570	Schroeder Pharmacy, Shelbyville...	15.2	.8362	126.6	82.4	86.0	Contains methyl alcohol.
20572	S. Jones, Shelbyville...	11.5	.8280	95.8	86.0	86.0	Below standard.
20604	Honchman & Koehler, Indianapolis...	10.7	.8292	89.1	86.0	86.0	Below standard.
20641	A. M. Reed, Greensburg...	3.1	.9313	25.8	48.9	45.0	Below standard.
21082	Jno. McCaffrey, Frankfort...	4.1	.9308	34.1	49.0	50.0	Below standard.
21285	Schroeder Pharmacy, Shelbyville...	12.5	.8353	104.1	67.4	86.0	Contains methyl alcohol.
21296	Sent in from Indianapolis...	4.5	.9353	37.5	46.7	91.4	Improperly labelled.

TINCTURA ZINGIBERIS.

Tincture Ginger.

Six samples of tincture of ginger were examined, of which three, or 50 per cent., were illegal. The illegal samples were so classed because the extract of ginger content was much lower than it should have been.

TINCTURE OF GINGER—LEGAL.

Lab. No.	Manufacturer or Dealer.	Specific Gravity at 20°C.	Grams Extract 100 c.c.	Alcohol by Volume.	Alcohol on Label.
19248	A. W. Osterhage, Terre Haute.....	.8355	1.266	85.6	.....
19380	J. E. Smith, Loogootee.....	.8267	1.20	88.3	93
19430	G. W. Dalton, Coal City.....	.8215	1.05	85.2	.....

TINCTURE OF GINGER—ILLEGAL.

Lab. No.	Manufacturer or Dealer.	Specific Gravity at 20°C.	Grams Extract 100 c.c.	Alcohol by Volume.	Alcohol on Label.	Remarks.
20162	R. L. Stone, Albion.....	.8170	.2463	89.0	86.0	Very weak tincture.
20175	J. S. Patterson, Garrett.....	.8235	.0764	85.8	85.0	Below standard.
20177	Clark & Smith, Garrett.....	.8378	.0377	84.2	93.0	Very weak tincture.

TINCTURA IODI.

Tincture Iodine.

Fifteen of the 27 samples of tincture of iodine examined were illegal, in all but two cases because of the presence of less iodine than required by the U. S. P. formula. Three samples were not properly labeled, as is the case with spirit of camphor. It is difficult to understand why tincture of iodine which, ever since the laboratory has been opened, have been reported as especially subject to adulteration, should, in the face of publicity and caution, continue to be of low grade.

TINCTURE OF IODINE—LEGAL.

Lab. No.	Manufacturer or Dealer.	Per Cent. U. S. P. Iodine.	Grams KI per 100 c.c.	Alcohol Declared on Label.
19471	H. V. Stark, Shelburn.....	105.6	4.5	94.9
19553	B. F. Fendig, Rensselaer.....	103.1	5.4	94.9
19760	L. L. Bryson, Nappanee.....	152.6	5.3	94.9
19804	Geo. U. Geyer, Lafontaine.....	105.3	5.64	94.0
19809	The Criswell Drug Co., Lafontaine.....	110.4	5.39	94.9
19820	Sent in from Rensselaer.....	114.4	5.65	.....
20030	L. G. Kramer, Michigan City.....	102.6	3.9	94.9
20044	Otto Kloepter, Michigan City.....	103.1	5.1	94.9
20169	M. C. Beck, Albion.....	106.4	5.3	94.0
20183	A. F. Halter, Garrett.....	107.5	4.9	94.9
20279	Chas. Leich & Co., Evansville.....	122.2	5.68	90.0
21453	U. E. Mast, Shipshewana.....	100.0	4.9	.....

TINCTURE OF IODINE—ILLEGAL.

Lab. No.	Manufacturer or Dealer.	Per Cent. U. S. P. Iodine.	Grams KI per 100 c.c.	Alcohol Declared on Label.
19544	A. F. Long, Rensselaer	91.7	5.0	94.9
19549	J. A. Lash, Rensselaer	84.4	0.0	94.9
19766	J. S. Walters, Nappanee	97.2	4.9	94.9
19770	C. W. Johnson, Nappanee	70.8	0.0	94.9
19877	C. O. Bates, Bunkerhill	65.2	0.0	94.9
20040	Edward Moran, Michigan City	105.5	4.4	Improperly labelled.
20047	Woodson & Willetts, Michigan City	115.0	5.3	Improperly labelled.
20052	Ohming Drug Co., Michigan City	95.6	2.8	Not over 99%.
20158	Sent in from Albion	89.1	4.5	94.4
20165	R. L. Stone, Albion	66.7	1.2	Improperly labelled.
20171	J. J. Stoehr, Garrett	71.5	0.0	94.0
20172	J. S. Patterson, Garrett	73.0	0.0	90.0
20178	Clark & Smith, Garrett	81.8	4.3	94.9
21463	J. A. Durand, Howe	37.0	2.64	
21579	Sent in from Indianapolis	65.6	3.53	Other ingredients not determined.

TINCTURA FERRI CHLORIDI.

Tincture Iron.

Thirteen of the 20 samples of tincture of iron analyzed were illegal. Three samples were classed as illegal because of the fact that the alcohol content was not stated. Ten other samples contained less than the required amount of iron. Several of these samples also failed to show the alcoholic content.

TINCTURE IRON—LEGAL.

Lab. No.	Manufacturer or Dealer.	Specific Gravity at 20°C.	Alcohol by Volume.	Per Cent. Iron.	Per Cent. U. S. P.	Alcohol on Label.
19546	A. F. Long, Rensselaer	1.0157	49.0	4.97	108.5	62.0
19803	Geo. U. Geyer, Lafontaine	1.0157	54.6	4.79	104.5	62.0
20031	L. G. Kramer, Michigan City	1.0050	59.0	4.71	102.8	62.0
20043	Otto Klefer, Michigan City	1.0342	55.6	5.71	124.6	68.0
20167	M. C. Beck, Albion	.9900	65.8	4.58	100.0	62.0
20176	Clark & Smith, Garrett	1.0045	59.1	4.61	100.6	62.0
20181	A. F. Halter, Garrett	.9761	70.1	4.58	100.0	62.0

TINCTURE IRON—ILLEGAL.

Lab. No.	Manufacturer or Dealer.	Specific Gravity at 20°C.	Alcohol by Volume.	Per Cent. Iron.	Per Cent. U. S. P.	Alcohol on Label.	Remarks.
19278	Frank E. Hanson, Peru	1.0075	48.0	4.69	102.4		No alcohol stated on label.
19547	J. A. Lash, Rensselaer	.9933	55.0	4.18	91.7		No alcohol stated on label.
19552	B. F. Fendig, Rensselaer	.9957	56.2	4.26	92.7	62.0	Below standard.
19674	Wm. G. Valentine, Terre Haute	.9947	61.2	5.04	110.0		No alcohol stated on label.
19810	Criswell Drug Co., Lafontaine	.9908	60.4	4.28	93.4	62.0	Below standard.
19875	O. C. Bates, Bunkerhill	.9397	68.4	2.82	61.5	62.0	Below standard.
20039	Ed. M. Moran, Michigan City	1.0220	54.6	4.16	90.8		No alcohol stated on label.
20050	Woodson & Willetts, Mich. City	1.0047	57.0	4.63	101.0		No alcohol stated on label.
20053	Ohming Drug Co., Mich. City	1.0044	60.8	4.47	96.9	62.0	Below standard.
20157	B. E. Miller, Albion	.9765	65.0	4.42	96.6	62.0	Below standard.
20163	R. L. Stone, Albion	.9810	64.4	4.12	90.8	86.0	Below standard.
20172	J. J. Stoehr, Garrett	.9803	62.9	4.07	88.8		Below standard.
20174	J. S. Patterson, Garrett	.9344	74.0	3.09	67.5	85.0	Alcohol too high.

SPIRITUS AETHERIS NITROSI.

Sweet Spirits Nitre.

Ten samples of sweet spirits of nitre were analyzed and every sample was found to be below the standard in U. S. P. content of ethyl nitrite. Two of these samples were but slightly deficient in ethyl nitrite. This preparation does not hold its strength long and should be frequently tested.

SWEET SPIRITS OF NITRE—ILLEGAL.

Lab. No.	Manufacturer or Retailer.	Per Cent. Ethyl Nitrite.	Per Cent. U. S. P.	Specific Gravity. at 20° C.	Alcohol on Label.	Ethyl Nitrite Per Fl. Oz.	Remarks.
20267	Louis Schmidt, Spencer.....	0.97	24.0	.8307	.....	.....
20379	F. H. Asperger, Riley.....	2.09	52.1	.8225	90	19	
20381	J. L. Graham, Riley.....	3.52	87.8	.8173	92	17.5	
20385	G. W. Dalton, Coal City.....	1.72	42.8	.8181	95	19	
20393	E. H. Bindley & Co., Terre Haute.....	2.36	58.8	.8165	90	19.2	
20576	Sent in from Terre Haute.....	2.88	72	.8212	90	19	
20583	Sent in from Indianapolis.....	3.76	94	.8136	92	17.5	
20629	Sent in from Terre Haute.....	3.84	96.1	.8172	.....	.....	Very slightly below standard.
21438	John Devine, Peru.....	2.04	51.0	.....	.....	.....	Sample too small for further examination.
21460	J. R. Mason, Shipshewana.....	0.07	1.7	.....	.....	.....	Entirely worthless.

OLEUM TEREBINTHINÆ.

Oil of Turpentine.

Of the four samples of oil of turpentine analyzed, one was illegal because of the presence of at least 25 per cent. of kerosene.

OIL OF TURPENTINE—LEGAL.

Lab. No.	Manufacturer or Retailer.	Specific Gravity at 20° C.	Polar Reading 100 mm.	Initial Boiling Point.	Portion Distilling Below 162° C.	Residue.	Remarks.
18341	Jas. S. Randle, Farmers.....	.8642	+32.1	150° C	82	*	Leaves no stain upon white filter paper.
19281	Frank E. Hanson, Peru.....	.8639	+37.0	166° C	84	†	No stain upon white filter paper.
19350	Peter Benz, Indianapolis.....	.8643	+25.8	157° C	80	Slight..	No stain on filter paper.

*Very slight upon evaporation.

†Very slight.

OIL OF TURPENTINE—ILLEGAL.

Lab. No.	Manufacturer or Retailer.	Specific Gravity at 20° C.	Polar Reading 100 mm.	Initial Boiling Point.	Portion Distilling Below 162° C.	Remarks.
9315	Sent in from Madison.....	.8462	+8.1	155° C	18	At least 25% kerosene present.

AQUA HYDROGENII DIOXIDI.

Hydrogen Peroxide.

Sixteen of the 40 samples of hydrogen peroxide were classed as illegal. Fifteen samples contained less than the U. S. P. content of hydrogen peroxide. One sample, otherwise satisfactory, did not declare the acetanilid content. Most of the hydrogen peroxides were of fairly satisfactory quality. Included in the legal list is a number which did not contain as much hydrogen peroxide as should have been present. The fact, however, that hydrogen peroxide as it is sold in loosely stoppered bottles is not a suitable preparation leads to the conclusion that, on the whole, the character of these goods is not such as to subject them to severe criticism. But three samples were notably deficient in hydrogen peroxide.

HYDROGEN PEROXIDE—LEGAL.

Lab. No.	Manufacturer or Dealer.	Per Cent. H ₂ O ₂ .	Per Cent. U. S. P.	Vols. Available Oxygen.	Acidity 25 C.C. H ₂ O ₂ .	Grams Solids Per 20 c.c.	Acetanilid.
19590	S. H. Knox & Co., Indianapolis.....	3.18	106.0	.....	3.2	.012	
*19591	S. H. Knox & Co., Indianapolis.....	2.93	97.6	.....	4.2	.027	
*19597	S. Kresge, Indianapolis.....	2.95	98.3	.....	4.1	.029	
20170	R. L. Stone, Albion.....	3.7	123	12.17	0.9	.006	
20247	Geo. F. Meyer, Cincinnati.....	3.0	100	9.87	1.0	.025	Declared.
20249	B. W. Hopkins, Seymour.....	3.0	100	9.87	1.6	.020	Declared.
20250	Andrews Schwenk Drug Co., Seymour.	3.3	110	10.85	4.2	.026	Declared.
20251	Sam Relicohouse, Seymour.....	3.1	103	10.19	1.9	.012	Declared.
20252	C. W. Millhouse, Seymour.....	3.7	123	12.17	0.8	.007	Declared.
20253	Central Phar. Co., Seymour.....	3.0	100	9.87	2.0	.017	Declared.
20266	Louis Schmidt, Spencer.....	3.0	100	9.87	1.6	.018	Declared.
20321	W. H. Peters, Madison.....	3.0	100	9.87	1.5	.027	Declared.
20384	G. W. Dalton, Coal City.....	3.0	100	9.87	1.6	.018	Declared.
20392	Knox Store, Terre Haute.....	3.0	100	9.87	1.2	.021	Declared.
*21086	Sent in from Frankfort.....	2.62	87.3	8.62	5.7	.026	Declared.
*21106	C. R. Hitch, Lafayette.....	2.72	90.6	8.95	2.5	.017	Declared.
*21109	O. V. Kernly, Lafayette.....	2.68	89.3	8.82	3.2	.018	Declared.
21109	Thompson, Peru.....	2.98	.....	9.80	2.7	.030	Declared.
*21135	Gaylord & Baumbauer, Wabash.....	2.98	99.3	9.80	2.6	.034	Declared.
*21213	J. Rodgers, Logansport.....	2.73	91.0	8.98	2.5	.015	Declared.
*21214	J. Rodgers, Logansport.....	2.93	97.6	9.64	4.5	.034	Declared.
*21217	Jos. E. Kinney, Logansport.....	3.61	120.3	11.87	0.7	.007	Declared.
*21218	Jos. E. Kinney, Logansport.....	2.79	93.0	9.18	4.0	.014	Declared.
21219	Nelson, Baker & Co., Detroit.....	3.01	100.3	9.90	1.8	.020	Declared.

*Slightly below standard.

HYDROGEN PEROXIDE—ILLEGAL.

Lab. No.	Manufacturer or Dealer.	Per Cent. H ₂ O ₂ .	Per Cent. U. S. P.	Vols. Available Oxygen.	Acidity 25 C.C. H ₂ O ₂ .	Grams Solids Per 20 C.C.	Remarks.
20244	Chas. S. McClain, Scottsburg.	2.2	73	7.23	.....	.....	Illegal on U. S. P. and acetanilid.
20246	Cox Pharmacy Co., Seymour.	2.8	93	9.21	1.8	.012	Below U. S. P. standard.
20248	A. J. Ollens, Seymour.	0.4	13	1.31	5.3	.017	Below U. S. P.
20320	Gibson & Reidel, Madison.	2.7	90	8.98	4.5	.015	Below U. S. P.
20428	E. H. Bindley & Co., Terre Haute.	3.4	113.3	11.05	2.6	.027	Acetanilid not declared.
20515	Alexander Drug Shop, Evansville.	2.60	86.6	8.55	3.3	.028	Below U. S. P. standard.
20516	Alexander Drug Shop, Evansville.	2.82	94.0	9.27	3.5	.020	Below U. S. P. standard.
20517	R. L. Orme, Evansville.	2.90	96.6	9.54	3.6	.187	Below standard.
20520	Schlaepfer's Pharmacy Co., Evansville.	0.52	17.3	1.71	2.0	.015	Below standard.
20542	W. Smith, Morristown.	2.91	97.0	9.57	2.7	.029	Below standard.
20550	E. M. Wedding, Cannelton.	2.72	90.6	8.94	3.5	.027	Below standard.
21134	Gaylord & Baumbauer, Wabash.	.96	32.0	3.16	2.2	.012	Below standard.
21339	Sent in from Greencastle.	2.63	87.6	8.65	1.75	.0532	Below standard.
21437	Jno. Devine, Peru.	2.94	98.0	9.67	2.50	.0252	Below standard.
21441	Jno. Devine, Peru.	2.88	96.0	9.47	3.50	.023	Below standard.
21445	Cox Pharmacy, Seymour.	2.50	83.6	8.225	4.25	.0988	Below standard.

TINCTURA OPII.

Tincture Opium.

But two of the eight samples of tincture of opium examined were legal. The other six samples all contained less morphine than was indicated on the label.

TINCTURE OPIUM—LEGAL.

Lab. No.	Manufacturer or Retailer.	Grams Morphine Per 100 C.C.	Opium, Grs. Per Fl. Oz. on Label.	Alcohol on Label.
20243	Allen & Dunlavy, Scottsburg.	1.19	45.6	48
20315	Percy L. Davis, Corydon.	1.25	46.0	52

TINCTURE OPIUM—ILLEGAL.

Lab. No.	Manufacturer or Dealer.	Grams Morphine Per 100 C.C.	Opium, Grs. Per Fl. Oz. on Label.	Alcohol on Label.	Remarks.
17939	Fred Asperger, Riley.	.61	45.6	48.0	Below standard.
19819	Sent in from Rensselaer.	1.07	.....	.....	Low in morphine.
20386	G. W. Dalton, Coal City.	1.07	46.0	50	Below standard.
20391	Buntin Drug Co., Terre Haute.	.68	45.6	48	Low in morphine.
20394	E. H. Bindley & Co., Terre Haute.	1.14	45.6	46	Below standard.
20866	Sent in from Knox.	1.06	.....	.....	Low in morphine.

DEODORIZED TINCTURE OF OPIUM—LEGAL.

Lab. No.	Manufacturer or Dealer.	Grams Morphine Per 100 C.C.	Opium, Grs. Per Fl. Oz. on Label.	Label.
20300	Chas. Leich Co., Evansville.....	1.39	.....	Contains 5¼ grains morphine. 48
20306	Chas. Leich Co., Evansville.....	1.27	.....

TINCTURE ARNICA—LEGAL.

Lab. No.	Manufacturer or Dealer.	Specific Gravity at 20° C.	Grams Extract Per 100 C.C.	Alcohol by Volume at 20° C.	Alcohol on Label.
19379	Warren Van Tress, Washington.....	.9497	4.51	47.0	46

TINCTURE ARNICA—ILLEGAL.

Lab. No.	Manufacturer or Dealer.	Specific Gravity at 20° C.	Grams Extract Per 100 C.C.	Alcohol by Volume at 20° C.	Remarks.
19165	Fults & Abshier, Newburg.....	.....	.....	.....	No statement of alcohol.
19280	Frank E. Hanson, Peru.....	.9568	3.17	35.8	No statement of alcohol.
21081	Jno. McCaffrey, Frankfort.....	.9437	3.19	46.4	No statement of alcohol.

WHITE BEESWAX.

Lab. No.	Manufacturer or Retailer.	Melting Point, °C.	Butyro at 65 °C.	Remarks.
18624	64.5	28.6	Legal.

YELLOW BEESWAX.

Lab. No.	Manufacturer or Retailer.	Melting Point, °C.	Butyro 65 °C.	Remarks.
19240	Sent in from Indianapolis.....	60	18.0	Adulterated.

EPSOM SALTS—LEGAL.

Lab. No.	Manufacturer or Retailer.	Per Cent. Mg. SO ₄ .	Appearance.	Per Cent. Anhydrous.	Remarks.
20593	Wm. A. Reid, Richmond.....	49.4	Clean, well crystallized.....	Slightly higher than in U. S. P. salt.....	
20594	Wm. A. Reid, Richmond.....	49.2	Clean, well crystallized.....	Slightly higher than in U. S. P. salt.....	

EPSOM SALTS—ILLEGAL.

Lab. No.	Manufacturer & Retailer.	Per Cent. MgSO ₄ .	Appearance.	Per Cent. Anhydrous.	Remarks.
19669	Sent in from Cambridge City ..	.....	.....	.....	Tests show the salt to be potassium nitrate. Tests show the salt to be potassium nitrate.
19778	Sent in from Alexandria .....	.....	.....	.....

CASTOR OIL—LEGAL.

Lab. No.	Manufacturer or Dealer.	Sp. G. at 20° C.	Refract. Index at 20° C.	Polar. Reading 100 m.m.	Alc. by Vol.	Saccharin.	Peppermint.
20286	Chas. Leich & Co., Evansville.....	.959	1.477	+12.0	1.09%	Present....	Trace.

WITCHHAZEL—LEGAL.

Lab. No.	Manufacturer or Dealer.	Sp. G. at 20° C.	Alcohol by Volume.	Formaldehyde.
19351	Frank Tea & Spice Co., Indianapolis.....	.9810	13.1	None.
19586	S. H. Knox & Co., Indianapolis.....	.9868	8.2	None.
19589	S. H. Knox & Co., Indianapolis.....	.9817	12.5	None.
19602	S. Kresge, Indianapolis.....	.9806	13.6	None.

GLYCERINE—LEGAL.

Lab. No.	Manufacturer or Dealer.	Sp. G. at 20° C.	Mineral Impurities.	Oxidisable Organic Matter.	Foreign Salts.
19354	Peter Bens, Indianapolis.....	1.2515	Trace.....	Trace.....	None.
19592	S. H. Knox & Co., Indianapolis.....	1.2580	None.....	None.....	Sulphates, trace.
19598	S. S. Kresge, Indianapolis.....	1.2495	None.....	None.....	None.

GLYCERINE—ILLEGAL.

Lab. No.	Manufacturer or Dealer.	Sp. G. at 20°C.	Mineral Impurities.	Oxidisable Organic Matter.	Remarks.
21580	Sent in from Indianapolis	1.251	None.....	None.....	Castor oil present.

SULPHUR—LEGAL.

Lab. No.	Manufacturer or Dealer.	Per Cent. Sulphur.	Soluble in Carbon Bisulphid.	Remarks.
20254	Sent in from Bringhamst.	99.9	Yes.....	Very clean.
20255	Sent in from Bringhamst.	99.9	Yes.....	Slightly dirty.
20639	A. M. Reed, Greensburg.....	99.9	Yes.....	Clean.

SYRUP IODIDE OF IRON—LEGAL.

Lab. No.	Manufacturer or Retailer.	Sp. G. at 20° C.	Per Cent. Ferrous Iodide.	Acidity as Hypophosphorus.	Per Cent. Total Sugar.
20280	Chas. Leich & Company, Evansville.....	1.336	5.1	0.14	47.7
20382	J. L. Graham, Riley.....	1.334	5.1	0.08	49.4

QUININE SULPHATE TABLETS—LEGAL.

Lab. No.	Manufacturer or Retailer.	Labeled Grains in Sulphate.	Number Grains Found in Sulphate.
16872	Henry Osterman, Seymour.....	2	1.88
19488	Sent in from Hagerstown.....	1	1.0
19752	Bought from Haag's Drug Store, Indianapolis.....	2	1.956
20692	Sent in from Indianapolis.....		Identified as quinine sulphate.

HYDROCHLORIC ACID—LEGAL.

Lab. No.	Manufacturer or Retailer.	Specific Gravity at 20° C.	Per Cent. HCl. by Weight.	Per Cent. U. S. P.
20261	James R. Layman, Spencer.....	1.1710	32.78	102.7
20427	E. H. Bindley & Co., Terre Haute.....	1.1710	32.88	103.0

HYDROCHLORIC ACID—ILLEGAL.

Lab. No.	Manufacturer or Retailer.	Specific Gravity at 20° C.	Per Cent. HCl. by Weight.	Per Cent. U. S. P.
20262	Louis Schmidt, Spencer.....	1.1495	29.16	91.4

SULPHURIC ACID—ILLEGAL.

Lab. No.	Manufacturer or Retailer.	Specific Gravity at 20° C.	Per Cent. H ₂ SO ₄ by Weight.	Per Cent. U. S. P.
21068	Louis Schmidt, Spencer.....	1.035	6.75	7.2

PROSECUTIONS.

The value of food and drug control can not be estimated by referring to tables of prosecutions. The most efficient work is done outside of the court room. Whenever it is possible to secure compliance with law without having to resort to the penalty clause,

such course is followed both by inspectors in the field and chemists in the laboratories, but there is always a point where persuasion and education must cease and punishment begin.

That there are still many manufacturers and distributors of foods and drugs who wilfully violate the laws is shown by the fact that during the year two hundred and thirty-three prosecutions were brought because of the sale of adulterated foods and drugs and the maintenance of unsanitary conditions at the place of production or distribution of food stuffs. The total fines and costs levied amounted to \$5,311.25, a sum which, if it could be applied, as is the case in several States, to the maintenance of the department, would go far in reducing expenses incident to the enforcement of the Food and Drug Laws.

It is worthy of comment that in almost no case was the defendant found not guilty. It has been the practice of the department not to prosecute unless every detail in the way of legal evidence was fully established, and it is due, no doubt, to this fact as well as to the fact that the courts are familiar with the laws and understand fully their purport, that the filing of a case is almost always followed by a conviction. The most of the cases were first offenses and the minimum fine of ten dollars and costs was usually imposed. In some instances, however, where the offense was notorious the maximum penalty for a first offense has been imposed. The prosecutions have been made in a great variety of cases which are elsewhere set out in tabulated form.

Fifty-one cases were brought because of the maintenance of unsanitary conditions in violation of the sanitary food law. One hundred and eighty-two cases involved some violation of the Pure Food and Drug Law. Fifty-three cases were filed against dairymen because of the sale of dirty milk and cream. In every instance a conviction was obtained. Following the crusade against the sale of bad eggs inaugurated in the early spring, thirty-three prosecutions and convictions were brought against dealers who sold, either wilfully or unwittingly, eggs which were putrid or decomposed. Fifteen dealers who exposed food stuffs for sale without properly protecting them against flies, dust and dirt were prosecuted and convicted. Fourteen prosecutions were brought against dairymen who sold milk or cream which contained less than the required butter fat. Sixteen cases involved the sale of cider containing benzoate of soda or saccharin and eight cases the sale of soft drinks similarly adulterated. No failure to convict for the sale of goods containing

either saccharin or benzoate of soda has been recorded during the year. This uniform success of prosecutions brought for violation of the anti-preservative section of the law is a strong commentary on the position taken by the courts in regard to this important matter.

Three prosecutions were successfully brought against dealers who sold oleomargarine for butter. In four instances butchers were convicted for selling sausage containing added starch. Eight cases involved the use of an illegal label.

In the list of cases filed for the maintenance of unsanitary conditions in violation of the sanitary food law, may be noted the prosecution of five dairymen who maintained filthy dairies, of fourteen grocers whose stores were unsanitary, of two meat markets and seven slaughterhouses which were unsanitary, of seven bakeries which did not conform to the sanitary requirements, of six restaurants which were improperly kept and dirty. Three butchers pleaded guilty and were fined for maintaining unsanitary refrigerators, three dealers were fined for indulging in or allowing their customers to expectorate on the floor. One proprietor of a food producing establishment pleaded guilty to neglect to provide proper fly screens and one dealer was delinquent in maintaining a dirty back yard. A baker operating a dirty bread wagon was also fined. In no case has the verdict of the lower court been reversed by a higher court. Indeed, in almost every instance the defendant has been so convinced of his guilt that he has pleaded guilty, or, if he has stood trial, accepted the decision of the court without complaint.

UNSANITARY CONDITIONS.

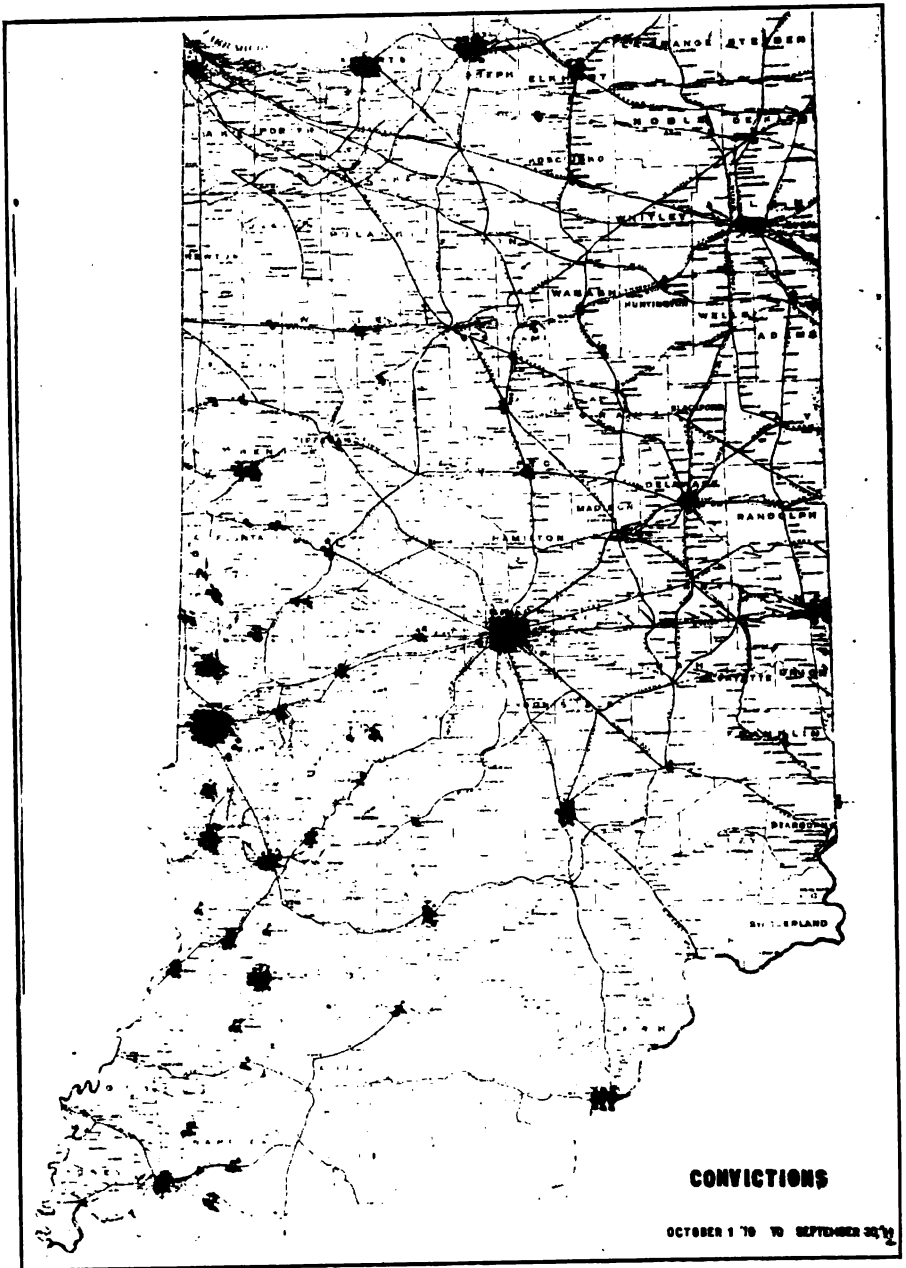
TABLE SHOWING CHARACTER OF CASES.

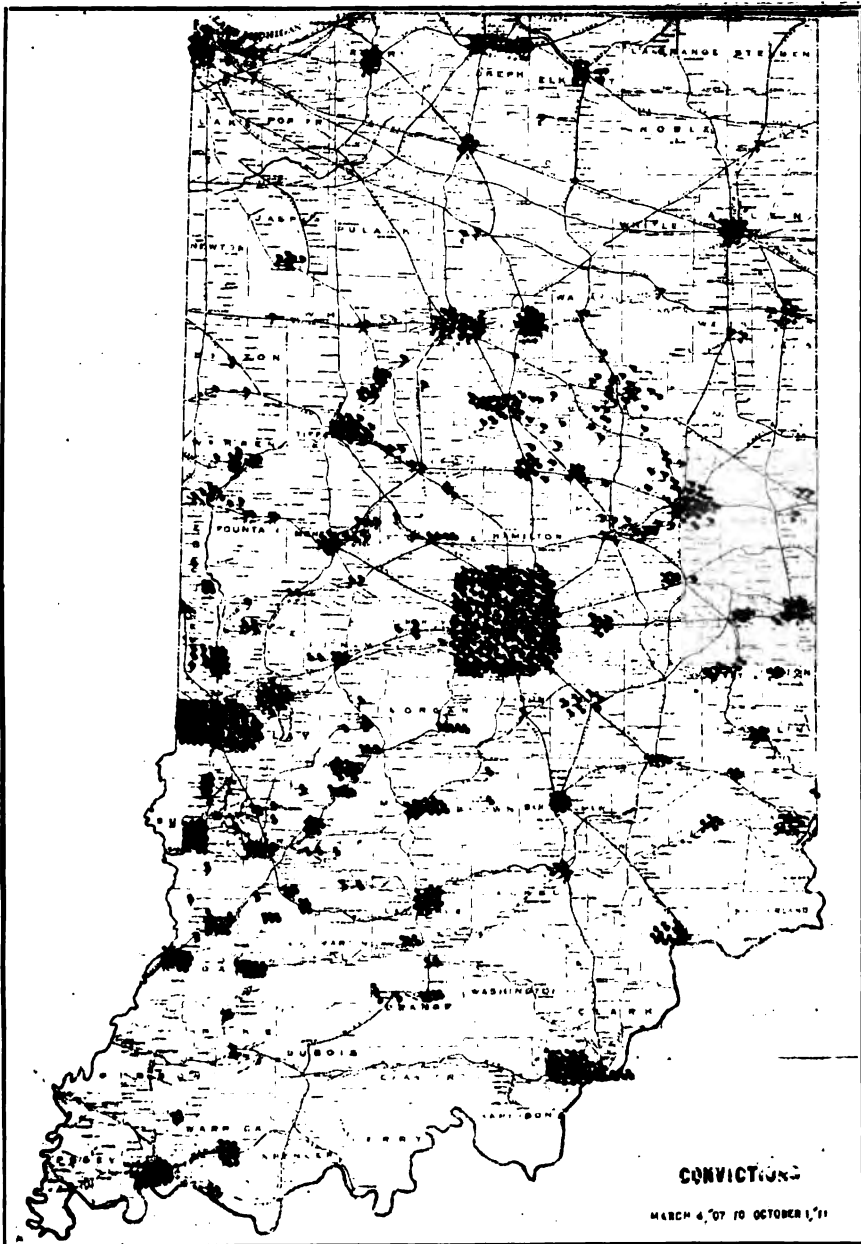
<i>Character of Case.</i>	<i>Number of Cases.</i>
Dairies	5
Grocery stores	14
Meat markets	2
Slaughterhouses	7
Bakeries	7
Restaurants	6
Bottling works	1
Bread wagon	1
Maintaining unsanitary refrigerators.....	3
Expectorating on floor.....	3
Fly screens not provided.....	1
Maintaining dirty back yard.....	1
Total	51

PROSECUTIONS.

TABLE SHOWING CHARACTER OF CASES.

<i>Character of Case.</i>	<i>Number of Cases.</i>
Dirty milk and cream.....	53
Bad eggs	33
Exposed foods	15
Maintaining unsanitary conditions.....	51
Milk and cream below standard.....	14
Adulterated lard	1
Beer sold as "Dry Beer".....	3
Artificially colored ice cream.....	2
Ice cream below standard.....	4
Olive oil containing cotton seed.....	1
Watered and iced oysters.....	1
Spirits of camphor below standard.....	3
Cider containing benzoate of soda and saccharin.....	16
Soft drinks containing benzoate of soda and saccharin	8
Oleomargarine for butter.....	3
Selling "wormy" candy.....	1
Selling sausage with cereal not stamped "cereal added"	4
Selling coffee and chicory mixed without being prop- erly labeled	1
Misbranding	8
Lemon flavor below standard in oil content.....	2
Dirty bottled soda.....	1
Drink artificially colored for whisky.....	1
Apple brandy not apple brandy.....	2
Whisky not a pure whisky.....	2
Blackberry cordial not a blackberry cordial.....	1
Banana cordial not a banana cordial.....	1
Animal slaughtered in advanced state of pregnancy...	1
Total	233





LIST OF PROSECUTIONS BROUGHT UNDER THE FOOD AND DRUG LAW, OCTOBER, 1910-OCTOBER, 1911.

COUNTY.	Lab. No.	Name and Address of Defendant.	Why Prosecuted.	Date of Trial.	Final Disposition.
Adams.		S. E. Hite, Deatur.	Selling exposed foodstuff.	8-15-11	Fined \$10 and costs.
Allen.	15275	Lundley Baldwin, Ft. Wayne.	Lemon extract, misbranded, artificially colored and below standard in oil content.	3-4-11	Not guilty.
Allen.		John G. Sauerteig, Ft. Wayne.	Unsatisfactory bakery.	4-25-11	Fined \$10 and costs.
Allen.		Joseph Odison, Ft. Wayne.	Selling dirty milk.	4-25-11	Fined \$10 and costs.
Bartholomew.		Geo. Herrman, Ft. Wayne.	Maintaining unsanitary refrigerator in meat market.	7-7-11	Fined \$10 and costs.
Bartholomew.		H. Boyd, Columbus.	Selling bad eggs.	7-8-11	Fined \$10 and costs.
Bartholomew.		Geo. I. Winans, Columbus.	Selling bad eggs.	7-14-11	Fined \$10 and costs.
Bartholomew.		Watson & Baker, Columbus.	Maintaining unsanitary slaughterhouse.	7-14-11	Fined \$15 and costs.
Bartholomew.		John Hughes, Columbus.	Maintaining unsanitary grocery store.	7-27-11	Fined \$10 and costs.
Bartholomew.		Adrian E. George, Columbus.	Maintaining dirty grocery store.	7-27-11	Fined \$10 and costs.
Bartholomew.		Herman Lestman, Columbus.	Selling bad eggs.	7-28-11	Fined \$10 and costs.
Bartholomew.		Boyd & Pearce, Columbus.	Selling bad eggs.	7-28-11	Fined \$10 and costs.
Benton.		John Dahn, Columbus.	Animal slaughtered in advanced state of pregnancy.	8-19-11	Fined \$15 and costs.
Benton.		Rockwood Bros., Boswell.	Spirits of camphor improperly labeled.	1-5-11	Fined \$15 and costs.
Carroll.	19230	Grant Johnson, Oxford.	Unsatisfactory bakery.	1-5-11	Fined \$15 and costs.
Carroll.		Frank Crone, Delphi.	Expectorating on floor.	10-26-10	Fined \$10 and costs.
Clay.		J. G. Yeum, Brazil.	Selling adulterated lard.	11-28-10	Fined \$10 and costs.
Clay.		Victor Ahlemeyer, Brazil.	Selling bad eggs.	8-29-11	Fined \$10 and costs.
Clay.		W. D. Stewart, Brazil.	Selling bad eggs.	7-1-11	Fined \$10 and costs.
Davies.	18374	J. L. Dowling, Washington.	Selling strawberry pop containing saccharin.	12-9-10	Fined \$10 and costs.
Davies.	18377	A. J. Dante, Washington.	Selling red rock containing benzoate of soda.	12-9-11	Fined \$10 and costs.
Davies.	20635	A. J. Dante, Washington.	Selling dirty bottled soda.	5-23-11	Fined \$25 and costs.
Davies.		Brill & Dougherty, Plainville.	Selling bad eggs.	6-21-11	Fined \$15 and costs.
Davies.		Roscoe McCormick, Washington.	Selling bad eggs.	6-22-11	Fined \$10 and costs.
Davies.		Arthur Haskins, Washington.	Selling bad eggs.	6-26-11	Fined \$10 and costs.
Dearborn.		Rudolph Hern, Harrison.	Misbranding drug.	9-29-11	Fined \$10 and costs.
Delaware.	20653	H. S. Mason, Auburn.	Selling dirty milk.	7-29-11	Fined \$10 and costs.
Delaware.	20655	Carl Nottingham, Muncie.	Selling skimmed and watered milk.	7-29-11	Fined \$10 and costs.
Delaware.		E. E. Ramey, Muncie.	Selling artificially colored ice cream.	7-19-11	Fined \$10 and costs.
Delaware.		Hurst Brothers, Muncie.	Selling bad eggs.	7-19-11	Fined \$10 and costs.
Delaware.		H. W. Jones, Muncie.	Selling bad eggs.	7-19-11	Fined \$10 and costs.
Delaware.		Jos. B. Cashdollar, Muncie.	Selling bad eggs.	7-19-11	Fined \$10 and costs.
Elkhart.	19769	C. W. Johnson, Napoleon.	Spirits of camphor below U. S. P. standard.	2-7-11	Fined \$10 and costs.
Elkhart.	20975	Ira S. Marshall, Goshen.	Selling dirty and skimmed milk.	7-31-11	Fined \$10 and costs.
Elkhart.	20977	Ed Yeager, Goshen.	Selling skimmed milk.	7-31-11	Fined \$10 and costs.
Elkhart.	19 63	A. P. Sheller, Goshen.	Dirty milk.	3-16-11	Fined \$10 and costs.
Elkhart.	19959	L. A. Sarbaugh, Goshen.	Olive oil, containing cottonseed oil.	3-16-11	Fined \$10 and costs.

Elkhart.	19965	Chas. Ulery, Guelson.	Dirty milk	3-16-11	Fined \$10 and costs.
Floyd.	19607	C. W. Bruleck, New Albany.	Cream below standard fat content, dirty.	2-16-11	Fined \$10 and costs.
Floyd.	19613	Charles H. Miller, New Albany.	Milk below standard fat content.	2-16-11	Fined \$10 and costs.
Floyd.	21118	Fred Juchemold, New Albany.	Milk watered.	2-16-11	Fined \$10 and costs.
Floyd.	21117	John Peyton, New Albany.	Selling dirty milk.	8-16-11	Fined \$10 and costs.
Floyd.		Benj. Dean, New Albany.	Maintaining an unsanitary bakery.	8-16-11	Pies of gully; \$10 and costs.
Floyd.		Gottlieb Bauer, New Albany.	Selling dirty milk.	8-17-11	Pies of gully; \$10 and costs.
Floyd.		Chas. Rush, New Albany.	Selling dirty milk.	8-17-11	Pies of gully; \$10 and costs.
Floyd.	21121	Simon Greenfield, New Albany.	Selling dirty milk.	8-17-11	Pies of gully; \$10 and costs.
Floyd.		Wm. Stonecipher, New Albany.	Maintaining unsanitary grocery and meat market.	8-17-11	Fined \$10 and costs.
Floyd.		J. F. Goodwin, Hillsboro.	Dirty restaurant.	11-28-10	Fined \$10 and costs.
Fountain.		Thos. A. Summers, Hillsboro.	Spirits of camphor below standard in U. S. P.	12-15-10	Fined \$10 and costs.
Fountain.	19404	George McOmegal, Veedersburg.	Cider containing saccharin.	12-15-10	Fined \$10 and costs.
Fountain.		Mary Shackle, Brookville.	Selling bad eggs.	8-17-11	Fined \$10 and costs.
Greene.		Linton Supply Co., Linton.	Uncovered confectionery.	12-22-10	Fined \$10 and costs.
Greene.		Walter Reid, Linton.	Uncovered confectionery.	12-22-10	Fined \$10 and costs.
Greene.		Henry A. Walters, Linton.	Uncovered confectionery.	12-22-10	Fined \$10 and costs.
Greene.		A. J. Dant, Worthington.	Selling dirty bottled soda.	8-4-11	Fined \$10 and costs.
Greene.		James H. Pos, Linton.	Maintaining unsanitary slaughterhouse.	8-14-11	Fined \$25 and costs.
Greene.		Ezra F. Gwinn, Linton.	Selling bad eggs.	8-21-11	Fined \$10 and costs.
Greene.		Chas. H. Fisher, Linton.	Selling bad eggs.	8-21-11	Fined \$10 and costs.
Greene.		Earl J. McWilliams, Worthington.	Maintaining dirty restaurant.	9-1-11	Fined \$10 and costs.
Greene.		Joe Greene, Worthington.	Maintaining unsanitary slaughterhouse.	9-1-11	Fined \$10 and costs.
Hendricks.		J. W. Beck, Danville.	Uncovered food products.	1-10-11	Fined \$10 and costs.
Hendricks.		E. O. Phares, Danville.	Uncovered food products.	1-10-11	Fined \$10 and costs.
Howard.		Will Ward, Kokomo.	Exposed bakery goods.	4-19-11	Fined \$10 and costs.
Huntington.		W. E. Lawyer, Huntington.	Maintaining unsanitary grocery store.	8-10-10	Fined \$10 and costs.
Knox.	19477	Wallard & Co., Oaktown.	Selling "Juni" containing benzene of soda.	11-22-10	Fined \$10 and costs.
Knox.		Edwin H. Boston, Bicknell.	Spitting on floor.	2-15-11	Fined \$25 and costs.
Knox.		Marcus L. Knight, Bicknell.	Unsanitary restaurant.	2-15-11	Fined \$10 and costs.
Knox.		Ellis G. Hooper, Bicknell.	Selling watered and food oysters.	2-25-11	Fined \$25 and costs.
Knox.		Samuel Garnett, Bicknell.	Unsanitary slaughterhouse.	2-14-11	Fined \$25 and costs.
Knox.		Wm. L. Shuler, Vincennes.	Selling bad eggs.	7-8-11	Fined \$10 and costs.
Knox.		H. G. Ponnell, Vincennes.	Selling older containing benzene of soda.	7-11-11	Fined \$10 and costs.
Knox.		Albert Harprie, Vincennes.	Selling bad eggs.	7-18-11	Fined \$10 and costs.
Knox.		A. J. Hooper, Bicknell.	Beer sold as "Dry Beer."	9-23-11	Fined \$10 and costs.
Kosciusko.	19723	Oliver Michels, Warsaw.	Dairy unsanitary conditions.	10-13-10	Fined \$10 and costs.
Lake.	20011	Prevo Bros., Hammond.	Selling oleomarga ine for butter.	2-14-11	Fined \$10 and costs.
Lake.		F. M. Ensign, Gary.	Selling dirty milk in a dirty container.	2-17-11	Fined \$10 and costs.
Lake.		Geo. Schmidt, Hammond.	Maintaining an unsanitary bakery.	8-30-11	Fined \$10 and costs.
Lake.		DePoate & Leucenia, Hammond.	Selling wormy candy.	8-30-11	Pies of gully; \$10 and costs.
Laporte.		James Lusby, Laporte.	Maintaining dirty back yard.	9-1-11	Fined \$10 and costs.
Laporte.		John Thomas, Laporte.	Selling dirty milk.	9-1-11	Fined \$10 and costs.
Laporte.		Jacob Rose, Laporte.	Selling milk containing visible dirt.	9-7-11	Fined \$10 and costs.
Laporte.		A. Rehbolts, Laporte.	Selling milk containing visible dirt.	9-7-11	Fined \$10 and costs.
Laporte.		Christ Heatherson, Laporte.	Selling milk containing visible dirt.	9-28-11	Fined \$10 and costs.
Laporte.		S. A. Thomas, & Bro. Laporte.	Selling milk containing added water.	9-29-11	Fined \$10 and costs.

LIST OF PROSECUTIONS BROUGHT UNDER THE FOOD AND DRUG LAW, OCTOBER, 1910-OCTOBER, 1911—Continued.

COUNTY.	Lab. No.	Name and Address of Defendant.	Why Prosecuted.	Date of Trial.	Final Disposition.
Laporte		Albert Decker, Laporte	Selling milk containing viable dirt.	9-29-11	Fined \$10 and costs.
Lawrence		Austin Crawford, Bedford	Selling dirty milk	9- 8-11	Fined \$10 and costs.
Lawrence		Marion Henderson, Bedford	Selling dirty milk	9- 8-11	Fined \$10 and costs.
Lawrence		Wm. McDaniel, Bedford	Selling dirty milk	8- 2-11	Fined \$10 and costs.
Lawrence		John W. Hoover, Bedford	Selling dirty milk	8- 2-11	Fined \$10 and costs.
Marion	19341	Charles Gardner, Indianapolis	White newst art containing starch	12-14-10	Fined \$10 and costs.
Marion	19625	Ella Russell, Indianapolis	White newst art containing starch	12-30-10	Fined \$10 and costs.
Marion	19642	Ella Russell, Indianapolis	Oleomargarine for creamery butter	1-31-11	Fined \$10 and costs.
Marion	19673	Henry J. Huder, Indianapolis	Oleomargarine for creamery butter	1-31-11	Fined \$10 and costs.
Marion		J. Sattinger, Indianapolis	Paregoric, no statement concerning alcohol or opium content.	3-30-11	Fined \$10 and costs.
Marion	19812	Mike Spanos, Indianapolis	White soda containing saccharin	3-15-11	Fined \$10 and costs.
Marion	20000	T. J. Ford, Indianapolis	White soda containing saccharin and dirt	3-15-11	Fined \$10 and costs.
Marion	19727	H. W. Knapelin, Indianapolis	Paregoric, no alcohol or opium content stated on label.	4- 3-11	Fined \$10 and costs.
Marion	19743	H. W. Knapelin, Indianapolis	Paregoric, no alcohol or opium content stated on label.	4- 3-11	Fined \$10 and costs.
Marion	20577	C. C. Tope, Indianapolis	Dirty milk	5-12-11	Fined \$10 and costs.
Marion	20603	Carl Bisag, Indianapolis	Dirty milk	5-24-11	Fined \$10 and costs.
Marion		Nick Monoles, Indianapolis	Unsanitary bread wagon	5-26-11	Fined \$10 and costs.
Marion	20630	S. S. Kresge, Indianapolis	Selling adulterated soft drink (Orangesade)	6- 2-11	Fined \$10 and costs.
Marion	20710	Joe Benedetto, Indianapolis	Selling ice cream artificially colored	7- 3-11	Fined \$10 and costs.
Marion	20779	John Daniels, Indianapolis	Selling dirty milk	6-27-11	Fined \$10 and costs.
Marion	20781	E. F. Eckles, Indianapolis	Selling dirty milk	7-24-11	Fined \$10 and costs.
Marion	20782	Union Dairy Co., Indianapolis	Selling dirty milk	7-25-11	Fined \$10 and costs.
Marion	20784	C. C. Tope, Indianapolis	Selling milk below standard	8-11-11	Fined \$10 and costs.
Marion	20785	C. C. Tope, Indianapolis	Selling cream below standard	8-11-11	Fined \$10 and costs.
Marion	20786	Geo. T. Ryan, Indianapolis	Selling dirty cream	8-11-11	Fined \$10 and costs.
Marion	20788	O. Jessup, Indianapolis	Selling dirty milk	7-26-11	Plea of guilty, \$10 and costs.
Marion	20791	Wm. Clark, Indianapolis	Selling dirty milk	6-27-11	Fined \$10 and costs.
Marion	20793	James Harding, Ben Davis	Selling dirty milk	7-26-11	Fined \$10 and costs.
Marion	20807	Prace Sanitary Milk Co., Indianapolis	Selling dirty milk	7- 6-11	Plea of guilty, \$10 and costs.
Marion	20809	Geo. W. Kinnick, Indianapolis	Selling dirty milk	6-27-11	Fined \$10 and costs.
Marion	20828	H. E. Wischniwey, Indianapolis	Selling skinned and dirty milk	7- 6-11	Fined \$10 and costs.
Marion	20847	John B. Browder, Indianapolis	Selling dirty milk	7-26-11	Plea of guilty, \$10 and costs.
Marion	20848	John B. Browder, Indianapolis	Selling dirty milk	7-26-11	Plea of guilty, \$10 and costs.
Marion		Samuel Jukerman, Fair Grounds, Indianapolis	Selling skinned and dirty milk	7- 6-11	Plea of guilty, \$10 and costs.
Miami		O. C. Bates, Bunkerhill	Exposed food at fair grounds	9- 8-11	Fined \$10 and costs.
Miami	19876	Rudolph Bender, Peru	Spirit of camphor below standard	3-13-11	Fined \$10 and costs.
Miami		Wm. E. Mattox, Bloomington	Sale of adulterated sausage	4- 3-11	Fined \$10 and costs.
Monroe		Selling dirty milk	Selling dirty milk	11-22-10	Fined \$10 and costs.
Montgomery		John D. Hollander, Waveland	Cider containing benzene of soda	12-26-10	Fined \$10 and costs.

Montgomery	19701	Holland & Co., Wayland	Apple cider containing benzoate of soda.	2-26-11	Fined \$10 and costs.
Montgomery	21019	W. H. Galey, Crawfordville	Milk containing sand and organic matter.	3-16-11	Fined \$20 and costs.
Montgomery		Thomas Lynch, Crawfordville	Filthy cream.	3-16-11	Fined \$20 and costs.
Orange		John Gresham, French Lick	Selling decayed, old eggs for fresh eggs.	1-9-11	Fined \$10 and costs.
Owen		Walter J. Gresham, French Lick	Selling decayed, old eggs for fresh eggs.	1-9-11	Fined \$10 and costs.
Owen		Earl Johnson, Spencer	Dirty milk.	3-23-11	Fined \$10 and costs.
Owen		Frank Nichols, Calmar	Selling bad eggs.	9-18-11	Fined \$10 and costs.
Owen		Frank Greene, Quincy	Selling uncovered sandwiches.	8-10-11	Fined \$10 and costs.
Owen		Otto Bender, Quincy	Selling exposed confectionery.	8-10-11	Fined \$10 and costs.
Owen		Karl Lowry, Quincy	Selling uncovered lemonade.	8-10-11	Fined \$10 and costs.
Parke		Frank Jukes, Rockville	Unsanitary meat market.	1-19-11	Fined \$10 and costs.
Pike		J. F. Sinclair, Rockville	Unsanitary food products.	1-19-11	Fined \$25 and costs.
Pike		Issue Whitaker, Petersburg	Unsanitary slaughterhouse.	6-29-11	Fined \$10 and costs.
Pike		Wm. D. Goud, Petersburg	Selling bad eggs.	6-29-11	Fined \$10 and costs.
Pike		Ira Richardson, Winslow	Selling bad eggs.	6-29-11	Fined \$10 and costs.
Pitman		J. E. Daniels, Greencastle	Dirty restaurant.	11-29-10	Fined \$15 and costs.
Pitman		Edwood Lee, Greencastle	Unsanitary restaurant.	12-2-10	Fined \$10 and costs.
Pitman	20135	W. D. Stover, South Bend	Dirty grocery store.	12-7-10	Fined \$15 and costs.
St. Joseph	20143	W. G. Feldon, South Bend	Milk containing dirt and organic matter.	3-23-11	Fined \$10 and costs.
St. Joseph	20144	Jno. B. Sholley, South Bend	Dirty milk.	3-23-11	Fined \$10 and costs.
St. Joseph	20215	Daniel Haas, South Bend	Milk containing added water.	3-23-11	Fined \$10 and costs.
St. Joseph	20216	S. E. Borden, South Bend	Dirty milk.	3-23-11	Fined \$10 and costs.
St. Joseph	20218	Ralph Troupe, South Bend	Dirty milk.	3-23-11	Fined \$10 and costs.
St. Joseph	2-2220	H. W. Nelson, South Bend	Milk containing dirt and organic matter.	3-23-11	Fined \$10 and costs.
St. Joseph	20222	Geo. S. Reeves, South Bend	Dirty milk.	3-8-11	Fined \$10 and costs.
St. Joseph		John Wesolowski, South Bend	Unsanitary bottling works.	6-21-11	Fined \$25 and costs.
St. Joseph		Samuel Wesolowski, South Bend	Maintaining an unsanitary refrigerator in meat market.	9-27-11	Fined \$10 and costs.
St. Joseph		Henry Schacht, South Bend	Unsanitary refrigerator.	9-1-11	Fined \$10 and costs.
Sullivan	15611	Edwin R. Price, Sullivan	Selling dirty milk.	1-23-11	Fined \$10 and costs.
Sullivan	19889	Floyd Durham, Sullivan	Paragore, improperly labeled.	1-23-11	Fined \$10 and costs.
Sullivan	19893	Johnson & Johnson, Sullivan	Cider containing benzoate of soda.	1-23-11	Fined \$10 and costs.
Sullivan	19894	B. T. McAtel, Farmersburg	Bologna containing cereal.	3-8-11	Fined \$10 and costs.
Sullivan		Sullivan Fruit Co., Sullivan	Cider containing saccharin and artificially colored.	9-16-11	Fined \$10 and costs.
Sullivan		Sullivan Fruit Co., Sullivan	Selling cider containing benzoate of soda.	9-16-11	Fined \$10 and costs.
Sullivan		Wm. Johnson, Sullivan	Selling cider containing benzoate of soda.	9-16-11	Fined \$10 and costs.
Sullivan		Monon Coal Co., Mgr. Sullivan	Maintaining unsanitary slaughterhouse.	9-8-11	Fined \$25 and costs.
Sullivan		James Atkinson, Farmersburg	Maintaining dirty grocery.	9-8-11	Fined \$10 and costs.
Sullivan		Pinkney N. Buchanan, Farmersburg	Ply screens not provided.	9-7-11	Fined \$10 and costs.
Sullivan		Ford Creed, Tipton	Selling bad eggs.	9-7-11	Fined \$10 and costs.
Sullivan		Ed. Richardson, Tipton	Maintaining dirty grocery store.	9-7-11	Fined \$10 and costs.
Tipton		Ammie Joyce, Tipton	Selling bad eggs.	8-22-11	Fined \$10 and costs.
Tipton		Morton E. Leavitt, Tipton	Selling bad eggs.	8-14-11	Fined \$10 and costs.
Tipton	19140	J. Vogel & Sons, Evansville	Selling bad eggs.	9-19-11	Fined \$10 and costs.
Vanderburgh	19152	Mt. Valley Bottling Works, Evansville	Soft drinks containing saccharin.	10-1-10	Fined \$20 and costs.
Vermilion		A. E. Tutewiler, Clinton	Soft drinks containing saccharin and benzoic acid.	10-19-10	Fined \$20 and costs.
			Dirty grocery store.	12-3-10	Fined \$10 and costs.

LIST OF PROSECUTIONS BROUGHT UNDER THE FOOD AND DRUG LAW, OCTOBER, 1910-OCTOBER, 1911—Continued.

COUNTY.	Lab. No.	Name and Address of Defendant.	Why Prosecuted.	Date of Trial.	Final Disposition.
Vermilion		Geo. Axton, Newport	Spitting on floor of bakery	6-13-11	Fined \$10 and costs.
Vermilion		August Jenks, Newport	Dirty grocery	6-13-11	Fined \$10 and costs.
Vermilion		L. J. Pace, Newport	Dirty grocery	6-13-11	Fined \$10 and costs.
Vermilion		Grant Beard, Clinton	Selling dirty milk	6-8-11	Fined \$10 and costs.
Vermilion		W. A. Beard, Clinton	Dirty dairy	6-8-11	Fined \$25 and costs.
Vermilion		J. T. Turberville, Clinton	Selling dirty milk	6-8-11	Fined \$25 and costs.
Vermilion		J. J. Wilkinson, Clinton	Bread uncovered in transit	6-12-11	Fined \$10 and costs.
Vermilion		James Corren, Clinton	Dirty grocery store	6-12-11	Fined \$15 and costs.
Vermilion		James Mansini, Clinton	Dirty grocery store	6-7-11	Fined \$15 and costs.
Vermilion		Wm. C. Shew, Clinton	Dirty slaughterhouse	6-7-11	Fined \$25 and costs.
Vermilion		Paul Rolfe, Clinton	Dirty bakery	6-13-11	Fined \$25 and costs.
Vermilion		Lee Christman, Clinton	Dirty grocery store	6-13-11	Fined \$25 and costs.
Vermilion		Albert J. Beard, Dana	Dirty restaurant	6-14-11	Fined \$10 and costs.
Vermilion		Ben Carter, Dana	Selling bad eggs	6-14-11	Fined \$10 and costs.
Vermilion		Galbreath Schreiner, Clinton	Maintaining dirty store	6-14-11	Fined \$10 and costs.
Vermilion		Chas. M. Guy, Cayuga	Unsatisfactory bakery	6-14-11	Fined \$10 and costs.
Vermilion		John Schwardt, Terre Haute	Uncovered food products	12-20-10	Fined \$10 and costs.
Vigo		Henry Miller of Parrott Baking Co., Terre Haute.	No lavatories	12-21-10	Fined \$25 and costs.
Vigo			Unclean toilets	12-21-10	Fined \$25 and costs.
Vigo			Unclean bake shop	3-8-11	Fined \$25 and costs.
Vigo			Paragorie below standard in morphine content	1-12-11	Fined \$25 and costs.
Vigo			Drink, artificially colored for whiskey	1-12-11	Fined \$25 and costs.
Vigo			Lemon flavor, below standard in oil content	1-12-11	Fined \$10 and costs.
Vigo			Apple brandy, not pure brandy	1-12-11	Fined \$10 and costs.
Vigo			Mountain Dew Whiskey, not a pure whiskey	1-12-11	Fined \$10 and costs.
Vigo			Sherrard Whiskey, not a pure whiskey	1-12-11	Fined \$10 and costs.
Vigo			Apple Brandy, not pure brandy	1-12-11	Fined \$10 and costs.
Vigo			Blackberry cordial, not a blackberry cordial	1-12-11	Fined \$10 and costs.
Vigo			Banana cordial, not a banana cordial	1-12-11	Fined \$10 and costs.
Vigo			Cereal sausage, not stamped	3-8-11	Fined \$10 and costs.
Vigo			Unsatisfactory dairy	4-12-11	Fined \$25 and costs.
Vigo			Unsatisfactory dairy	4-12-11	Fined \$25 and costs.
Vigo			Unsatisfactory dairy	4-12-11	Fined \$25 and costs.
Vigo			Milk containing organic matter	4-18-11	Fined \$25 and costs.
Vigo			Skimmed milk	4-18-11	Fined \$25 and costs.
Vigo			Dirty milk	4-18-11	Fined \$25 and costs.
Vigo			Cream below standard fat content, sand	4-20-11	Fined \$25 and costs.
Vigo			Dirty cream	4-3-11	Fined \$10 and costs.
Vigo	17939	Fred Asperger, Riley			
Vigo	18263	D. Goldman, Terre Haute			
Vigo	18491	James M. Hall, Vincennes			
Vigo	18521	San Rosenbaum, Terre Haute			
Vigo	18524	San Rosenbaum, Terre Haute			
Vigo	18527	San Rosenbaum, Terre Haute			
Vigo	18528	San Rosenbaum, Terre Haute			
Vigo	18530	San Rosenbaum, Terre Haute			
Vigo	18530	San Rosenbaum, Terre Haute			
Vigo		Chas. W. Lynn, Terre Haute			
Vigo		Pat Marboe, Terre Haute			
Vigo		Tall Bros., Terre Haute			
Vigo		John Ullrich, Terre Haute			
Vigo	20444	T. H. Pure Milk & Ice Co., Terre Haute			
Vigo	20447	J. W. Smith, Terre Haute			
Vigo	20455	J. W. Smith, Terre Haute			
Vigo	20456	J. W. Smith, Terre Haute			

SANITARY INSPECTION.

It is still not unusual to hear the remark, "if you saw it made you would never want to eat it again," but modern food factories are being constructed and run on the theory "if you see it made you will buy a case." These comments, with such antagonistic conclusions, represent well the changes that have taken place in food manufacture since it came to be understood that visible dirt is not the most dangerous, and that the invisible yeasts, moulds and bacteria are the evidences of uncleanness that if allowed to develop will turn good raw material into garbage and carry poison instead of food to the consumer.

Up to the time of the federal investigation of conditions at the stockyards, the food supply attracted notice only when it was insufficient to go around, and the housewife and diner alike gave little heed to the condition of its manufacture. The cheapest product was in greatest demand and the larger the bottle of catsup the most certain it was to sell, but the revelations of "The Jungle" and the reports of the packing house scandals were too unusual and startling to be ignored and the public woke alert and very much interested in its breakfast. The first was the call upon Congress which forced the passage of the Meat Inspection Law. The next, the uproar which compelled the enactment of the Food and Drug Law which had been the jest of House and Senate for years. With these comprehensive and far-reaching statutes in force and a corps of inspectors and chemists scouring the markets and haunting the factories for violators, it soon became evident that old methods of work would have to go, and in the past four years the sanitary advance has been astonishing.

The progress of the movement for clean shops and clean products has been hastened by the passage in many of the States by the so-called Sanitary Food Bill, which was drafted by a committee of food officials appointed at the Mackinac meeting of Dairy and Food Commissioners. It has been apparent to those in touch with conditions that many foods though chemically pure are sanitarily unfit to eat, and the bill as drafted and placed upon the statute books establishes sanitary requirements and forbids uncleanly methods in quite the same vigorous way that the Pure Food Laws define and prohibit adulteration and misbranding.

With inspectors at the doors of all packing houses doing an interstate business, with those sections of State and Federal Food Laws declaring against the use of unfit raw material and the employment of chemical preservatives, and with the sanitary food laws supplementing and rounding out the other legislation, a system of official regulation has come into force that safeguards the manufactured food supply against uncleanness of operatives, material and method, and places a premium upon the output of the well equipped and carefully regulated factory. Progressive and far sighted manufacturers soon saw the opportunities for building up trade by throwing open the doors of their canneries, bakeries and packing houses and inviting the hungry consumer to see for himself just how his food was prepared and handled. It was inevitable that some friction must result among officials and producers, and it did. Eleven of the first two hundred and fifty convictions for violation of the Federal Food Law were obtained because of the shipment of filthy, putrid and decomposed food, and twenty-three of the next two hundred and fifty convictions were recorded for the same violation of the law. The outcome of these prosecutions under the Federal Law and in the hundreds of cases brought for violation of the State laws, has always been to the advantage of the consumer and the business world.

The production of sanitary food depends much upon the kind of raw material and output. A flour mill and a dairy are as unlike as two businesses can well be, and yet they must conform to the same laws and alike turn out a clean and wholesome product. It will be well, therefore, so far as possible, to classify food producing establishments according to the nature of the output. This may be subject to almost immediate spoilage, as in the case of milk, meats, fruit, baker's goods and cooked foods ready for the table. It may be protected from deterioration by being placed in sterile containers, as is the case with canned goods, bottled beverages, etc. It may be treated with preservatives which arrest decay, as smoked meats, salted fish, pickles, butter, etc., or it may be of a nature not readily subject to the effect of keeping, as is flour, dried fruits, sugars, syrups, confectioneries, cereal products, spices, tea and coffee, oils and a great variety of common and much used foods. These four classes of food, which may be briefly described as *perishable*, *sterilized*, *preserved* and *nonperishable*, are made from such a variety of materials and prepared by such varying processes that the principles of sanitation to be observed with each are widely different.

Certain absolute necessities are, however, common to every class, and may be outlined as follows:

The first essential is a correct type of building made of suitable material, provided with proper light, heat, ventilation, sewage connection and water supply, so located as to have satisfactory transportation facilities, an ample supply of raw material and a receptive market. The next desideratum is a well designed equipment, properly installed, provided with suitable power and so built as to be readily cleaned.

The third essential, perhaps the most important of all, is a corps of skilled operatives who are cleanly in dress and person, whose habits of life are clean and who are not afflicted with venereal or any loathsome or contagious disease.

The fourth requirement is a sound, matured, clean raw material.

Having then in a general way established a classification of food products and certain essentials to their sanitary production, what methods of operation must be followed to avoid spoilage of material in the factory and its contamination during distribution? Each class, into one of which most food manufacturers may be placed, can perhaps be studied by itself with better results than by drafting some general code of sanitary requirements that will fit all cases, and separate treatment is, therefore, essential.

Perishable Foods.—The changes which take place in food when it “goes bad” are due exclusively to the growth and multiplication of moulds, yeasts and bacteria and to the production of deleterious or offensive material as a result of the activity of these organisms. Perishable food is food which offers most satisfactory conditions for the growth of these organisms, such as the presence of proper food material, sufficient moisture and a temperature at which they will grow. Such food must, therefore, be prepared in such a way that the number of organisms which may attack it is kept at a minimum, and that the product as it leaves the factory is protected against further invasion by the maintenance of a sufficiently low temperature to check their growth. Speaking generally, bacterial growth rarely takes place below 10° C. Nearly all bacteria are killed when subjected to a temperature of 65° C, although the spores of fruit are not destroyed except at the temperature of 100° C or over. Such perishable goods as milk and the usual products of the bakery and kitchen are protected against spoilage by heating them to this destructive temperature, as is accomplished in the pasteurizing of milk and in the cooking of food for the table, but

fresh meats and fruits are distributed raw and refrigeration is resorted to to hold the growths or organisms in check rather than destroy them.

But even when such precautions of high and low temperature are observed they cannot alone produce a sanitary food, and factory conditions must be such as will admit of perfect cleanliness. In the construction of the building the most important essentials are abundant light and good ventilation. The action of light, especially of sunlight, is injurious to many forms of micro-organisms and renders it impossible for filth to accumulate unseen. Proper ventilation insures the absence of foul odor and is also an incentive to cleanliness. The next requisite is an abundance of water and proper sewage connections arranged to allow a thorough flushing of all floors at the end of each day's work. In the dairy, a flushing of the stable is not yet followed except in unusual instances, but in the canning factory and abattoir it is the greatest agent for the removal of the organisms which cause decay, especially if after being scrubbed and flushed the floors and apparatus are treated with live steam. The floors should be constructed of nonabsorbent material, preferably concrete or cement, and so pitched that water will properly run off to catch-basins and sewers. The side walls and ceilings should be either well plastered, wainscoted or ceiled with metal or lumber and be oil painted or lime washed. Oil paint is much to be preferred to whitewash as it can be washed clean with soap and water. It is also more adhesive and does not scale off and fall into the food material. Doors, windows and other openings must be fitted with self-closing screen doors and wide window screens of a mesh sufficiently small to exclude all flies and insects, which might otherwise gain access to the food and contaminate it. A 14-mesh wire gauze is sufficient for this purpose. In the construction of trucks, trays, platforms, racks, tables and the necessary apparatus the simplest designs should be followed and they should be so built as to be easily taken down and thoroughly scrubbed and cleaned as often as is necessary. All toilets and lavatories must be built outside the rooms where the process of production, packing and distributing is carried on. The toilets should have separate ventilating flues or pipes discharging either into soil pipes or to the outside of the building in which they are situated. The floors of the toilet rooms should be of cement, tile, brick or other non-absorbent material and should be washed and scoured daily. The lavatories and washrooms should be adjacent to the toilet

rooms and kept supplied with soap, running water and towels. An imperative order should be issued and rigidly enforced requiring all operatives and persons who handle the material from which food is prepared or the finished product to wash their hands and arms thoroughly in clean water before beginning work or after visiting the toilet.

The use of cuspidors is not necessary and in most instances undesirable. Wherever necessary that cuspidors be provided for the use of operatives, they should be emptied and washed out daily with a disinfectant and a sufficient amount of the solution left in each cuspidor to keep it antiseptic. The practice of expectorating on the floor, walls or about the building should be prohibited.

It is a discredit to the food-producing industry that many conditions have been allowed to exist which were in every way inimical to the health of the operatives and certain to lead to the production of impure food. The condition of bakeshops, for instance, has been most unsatisfactory. In 1907, 43 per cent. or 582 of the bakeshops of Chicago, were located under ground in poorly ventilated rooms, wholly shut off from daylight. In many cases the work was done in foul air, in poorly lighted and unclean rooms by the workmen. Two hundred and eighty-two of these dungeons have already been abolished by the Department of Health of that city, but proper sanitary conditions will not be possible until everyone is closed and the industry driven above ground.

But even if the food is produced by competent workmen in a well equipped and operated shop it must be cared for after being distributed and guarded against contamination up to the time it is consumed. Restaurants and hotel dining-rooms and kitchens are far too frequently improperly managed and their condition when contrasted with the kitchen and dining-rooms of a tidy housewife shows a marked difference in cleanliness of operation in favor of the home. The chief reason why home-cooked food is clean is the care taken to protect it from dust, dirt and flies. The same care can and should be observed by the baker, butcher, grocer and hotel steward.

Sterilized Foods.—This class of foods includes all goods put up in air-tight containers, such as the bottled beverages and canned goods. While the treatment to high temperature necessary for sterilization destroys yeasts, moulds and bacteria and thereby renders unnecessary the observance of many of the sanitary requirements which are essential to the production of perishable foods.

yet the raw material used is not greatly different and must be carefully handled in order that deterioration and decay does not begin before the process of manufacture is completed. For instance, in the operation of a canning factory used for the production of tomato products or other canned vegetables, the construction of the building should be similar to that already described under *Perishable Foods*. It should be equally well lighted and ventilated and provided with facilities for proper sewage disposal. The floors should be constructed of non-absorbent material and should be thoroughly flushed at the end of each day's operation. The construction of the side walls and ceilings need not be as expensive as in buildings devoted to a production of perishable goods, but they should be tight and clean and sufficiently smooth so that they do not become dust laden. Certain classes of products which are put up in sealed containers, especially meats, fish, syrups and sweet, juicy fruits and vegetables attract flies in enormous numbers and a thorough and efficient screening is absolutely essential. Toilets and lavatories should be provided and properly cared for and the order requiring cleanliness of person should be insisted upon.

In some operations, such as those connected with the brewing industry, special care must be taken to prevent the contamination of material in the processes of manufacture by wild yeasts and moulds which, by their growth, destroy the character of the product. In fact, the sanitation of a brewery is a business in itself and cannot here be described in detail.

Preserved Foods.—Preserved foods are those which are treated with chemicals which arrest decay, such as salt, vinegar and sugar, dried until all moisture is removed, or smoked. As a class, establishments producing these goods are not carefully operated, dependence being placed upon the chemicals to preserve the materials handled. Certain industries, such as those connected with the treatment of fish, are notoriously poorly equipped and badly managed from the sanitary standpoint. The disposal of refuse material, the care used in cleaning machinery and equipment, the facilities for proper storage are commonly inadequate. The use of the so-called antiseptic preservatives such as borax and benzoate of soda has been common in these establishments and they have been employed to supplement the natural preservatives largely because of inefficient processes and careless methods of work. When meats, fish, pickles, butter and all other foods which are chemically treated with salt, vinegar or spices, are prepared in a properly

constructed building such as described as essential to the production of perishable food, when waste material is immediately disposed of instead of being allowed to accumulate on the floor and apparatus, and when the value of water and steam as a sanitary precaution is realized, the manufacturer finds no necessity for using any additional preservatives. As in the case of other foods, the sanitary requirements may be summarized as follows: Well constructed building, good light and ventilation, prompt disposal of refuse, cleanliness, trained and efficient workers.

Non-Perishable Foods.—It is very difficult to outline the sanitary requirements of an establishment devoted to the production of non-perishable foods, as this class is very large and includes a great variety of products. A flour mill, for instance, even though poorly equipped and badly managed, will produce a clean product, as the effect of the equipment and bad management manifests itself in the grade of the output rather than by lowering its sanitary value. Special attention should, however, be paid to the proper cleaning of apparatus and to protection from the attack of animals and insects. An adequate supply of light and air is not as essential as in the case of the preparation of foods which deteriorate readily, but the careful manufacturer will always see to it that the health of his employes is protected as well as the character of his output, and plenty of fresh air and sufficient light are essential to this end.

Many non-perishable foods are packed in boxes or cartons, and much ingenious machinery is used in handling such foodstuffs. But certain goods can not be packed except by hand, and it is therefore most essential that these products which go direct from the package to the consumer's table are handled only by the cleanliest operatives. When precaution is not taken that the operatives are free from disease the danger of infection through such food supply is great. All employes who handle these goods should be provided with clean clothing and their hands and arms should be kept clean. In certain classes of industry the hair should be protected by the use of a tight-fitting cap. Any operatives suffering from colds or whose hands are cut or sore should be refused work until they are recovered. The matter of cleanliness and perfect health is so important that each foreman should be held as responsible for it as he is for the volume of output. Certain manufacturers, realizing the hygienic necessity for care in this respect, provide their operatives with a clean uniform each day and with

suitable caps, and see to it that their hands and nails are manicured until the most fastidious can not object to the handling of their foods by such well equipped and carefully inspected workmen.

In the development of the food-producing industry, the chief endeavor has been to secure volume of output at a minimum manufacturing cost, and so long as the consumer has been uninformed and disinterested the products have found a ready sale, but under new sanitary conditions imposed by stringent legislation and awakened public interest, the successful manufacturer of the future must study the sanitary side of food production just as he does new methods for reducing cost or increasing output, and the most successful manufacturer will be he who removes from his gates and doors the "No Admittance" signs and opens his factories to the inspection, not only of the official, but of every consumer who may wish to see his food prepared for market.

The sanitary inspection work carried on by traveling deputies of this department has been more productive of results than at any previous year, and the amount of work accomplished has been greater. This is, in a measure, due to the fact that a fifth inspector was added to the force in April. But the chief reason for the more efficient service has been the greater skill of the inspectors and their ability to cover their territory more fully and rapidly.

During the year the inspectors made 11,594 visits to places where foods were manufactured, or from which they were distributed. Of this number, 214 establishments were found to be in excellent condition, that is, meeting every requirement of the sanitary food law, and 6,212 places were in good condition, 4,256 were in fair condition, 741 poor, and 171 bad. The percentage of places listed as in good condition is higher this year than in any previous year, and the number of bad places is relatively low. These results, viewed with the knowledge that the inspection service is more rigid than heretofore, and the requirements more stringent, are very satisfactory.

The dairy situation from the point of view of the health officer, inspector and critical consumer is far from satisfactory, and the result of the inspections reported from month to month shows little or no improvement. Of the 199 dairies visited during the year, but one dairy was reported as being in excellent condition. Nineteen were in good condition, 47 fair, 70 poor, and 62 unqualifiedly bad.

The State has not, and probably will never have, a sufficient

number of inspectors adequately to handle the dairy situation, and most of the improvement which may be accomplished will be because of efficient work by local authorities. It is possible for every community to have a clean milk supply, and that without raising the price of milk beyond the reach of the consumer. This has been accomplished recently in the city of Richmond.

In September last, at the urgent request of dairymen and the health officer, Inspector Bruner visited Richmond and made a careful inspection of all dairies supplying milk in that city. He was given most efficient assistance by the Wayne County Bureau of Municipal Research, a local organization which had shown much interest in the pure milk question. At this inspection the sanitary conditions of the dairies were bad, and out of the thirty-seven dairies visited but sixteen scored above 50 points by the Government score card. The January inspection by the bureau showed progress in many instances, and the report of the bureau spoke hopefully of the local situation. As a result of this inspection the city health officer agreed that all dairies scoring less than 50 points would be deprived of their license. The report of the committee, read in part as follows:

“Your committee on dairies begs to report that the inspection undertaken under your direction has been completed and the results are herewith submitted.

“On the whole the situation has materially improved since the September inspection; most of the dairymen have made an effort to comply with the instructions given by State Inspector Bruner at that time. A few have made but half-hearted attempts to improve, and some who have entered the business since September are still short of minimum requirements of the State law and the city ordinance.

“Forty dairies were inspected, and of these 23 scored above 50, the minimum permitted by the city ordinance. In September, 37 were visited and but 16 were above 50. Twenty-eight of the 40 were also inspected in September, and 24 of these made an average improvement of 10 points. Of the 12 new dairies four score above 50 and eight below.

“Your committee regards it as very important that there be some systematic effort to rally public opinion to the support of our local authorities in a determined effort to further better conditions. The city inspector, Mr. Flook, is in close touch with the situation and stands ready to enforce as strict requirements as will be sup-

ported by the general public. It is simply out of the question for him to attempt to go further than this.

“To arouse public opinion it seems to your committee that there should be a publication of the names of all dairymen who have met present minimum requirements. This ‘white list’ would avoid the unpleasant features of a blacklist and the exposure of bad conditions, and would serve the same purpose. The city ordinance requires that dairies score at least 50 per cent. The publication of a list of dairies up to this standard would enable the public to patronize the best and thus penalize the careless by a loss of custom. A revision of the list could be made from time to time, as found advisable, if the interest of the dairymen and of the public should be sufficient to warrant it.”

This report, which was published in full in the local papers, impressed upon the dairymen the fact that they must produce clean milk and operate their stables in conformity with the law if they continued to do business. The fact that a number of the dairies still fell below the minimum score permitted by the city ordinance warranted a third inspection, which was made by State Inspector Bruner in February. At this time he found conditions greatly improved, and in no instance did any of the dairies visited fall below the score set as the minimum legal requirement.

As a result of the active work of the Wayne County Bureau of Municipal Research, the local health officer and the State inspector, every dairy has made improvements in the way of handling their milk and caring for the stable. Some of the dairymen have spent considerable money in equipping new buildings, putting in new floors, dividing the stables from the rest of the barn by installing partitions, and rebuilding milk houses. More than 200 cattle have been subjected to the tuberculin test, and at the present time it can be safely said of the Richmond milk supply that it is more carefully handled and in better sanitary condition than ever before. That this improved condition will in the long run be a decided benefit to the dairymen goes without saying; for the intelligent and critical consumer is bound to appreciate the fact that cleanly milk is worth more as a food than dirty milk, and that the dairyman who spends time, money and intelligent effort in improving the sanitary conditions of his dairy is worthy of his patronage.

Four thousand three hundred and twenty-five grocery stores were inspected, and of this number 108 were in excellent condition; 2,479 were in good condition, 1,523 fair, 198 poor and but 17 of the

entire number bad. Of the 2,000 meat markets visited, 27 were in excellent condition, 1,064 were good, 794 were fair, 104 poor and 11 bad. This is a satisfactory improvement over the results of previous years. One thousand two hundred and sixteen drug stores were inspected during the year. Nineteen of this number were listed as excellent, 955 were in good condition, 223 fair, 18 poor and but one bad. These figures show a very satisfactory condition of the drug stores of the State. One thousand four hundred and twenty-three bakeries and confectioneries were investigated, and 37 of them found to be in excellent condition, 787 in good condition, 507 fair, 85 poor and seven bad. Of the 1,438 hotels and restaurants inspected but 11 were in excellent condition, 504 were good, 748 were in fair shape, 153 poor, and 22 bad. Next to the dairies, the hotels and restaurants enter the unenviable class of most unsanitary food producing establishments.

In addition to these inspections, a large number of other places were visited. Among the list was 36 creameries, of which 28 were in good condition; 95 canning factories, of which 50 were in good condition, 34 fair and 11 poor; 88 slaughterhouses, of which 28 were good, 43 fair, 13 poor and four bad; 185 poultry houses, of which 30 were in good condition, 107 fair, 32 poor and 16 bad. Still other inspections were made of flour mills, cold storage plants, brewing companies, fruit houses, lunch carts, liquor houses, oyster houses, pretzel and pie factories and glucose works.

SUMMARY OF INSPECTIONS.

Inspections.	Number Inspected.	Number Excellent.	Number Good.	Number Fair.	Number Poor.	Number Bad.
Dairies.....	199	1	19	47	70	62
Grocery stores.....	4,325	108	2,479	1,523	198	17
Meat markets.....	2,000	27	1,064	794	104	11
Drug stores.....	1,216	19	955	223	18	1
Bakeries and confectioneries.....	1,423	37	787	507	85	7
Hotels and restaurants.....	1,438	11	504	748	153	22
Wholesale grocery stores.....	43	9	26	6	2	0
Creameries.....	36	0	28	7	1	0
Milk depots.....	17	0	6	5	3	3
Canning factories.....	95	0	50	34	11	0
Ice cream parlors.....	113	0	51	50	12	0
Ice cream factories.....	39	0	17	15	5	2
Slaughter houses.....	88	0	28	43	13	4
Poultry houses.....	185	0	30	107	32	16
Fish markets.....	38	0	27	45	10	6
Bottling works.....	42	0	12	21	7	2
Flour mills.....	67	0	53	13	1	0
Ice and cold storage plants.....	20	0	12	7	1	0
Brewing companies.....	11	0	8	3	0	0
Produce companies.....	18	0	5	8	4	1
Wholesale produce companies.....	13	0	2	10	1	0
Fruit houses.....	46	0	23	19	2	2
Commission houses.....	9	0	5	2	2	0
Wholesale confectioneries.....	5	0	4	1	0	0
Wholesale drug stores.....	7	0	4	3	0	0

SUMMARY OF INSPECTIONS—Continued.

Inspections.	Number Inspected.	Number Excellent.	Number Good.	Number Fair.	Number Poor.	Number Bad.
Tea stores.....	6	2	4	0	0	0
Lunch carts.....	5	0	1	4	0	0
Cider and vinegar works.....	1	0	0	0	1	0
Liquor houses.....	3	0	0	3	0	0
Wholesale liquor houses.....	4	0	4	0	0	0
Barrel houses.....	4	0	0	2	2	0
Jelly factories.....	6	0	0	3	3	0
Bread boxes.....	14	0	0	0	0	14
Bread wagon.....	1	0	0	0	0	1
Hominy companies.....	2	0	2	0	0	0
Wholesale oyster house.....	1	0	0	1	0	0
Baking powder company.....	1	0	0	1	0	0
Pretzel factory.....	1	0	1	0	0	0
Pie factory.....	1	0	0	1	0	0
Starch and glucose works.....	1	0	1	0	0	0
Total inspections.....	11,594	214	6,313	4,256	741	171

Two hundred and eighty different cities and towns were visited during the year. The population of these cities and towns, as determined by the census for 1910, is 1,288,726. As the places visited include all the larger cities and towns, and many smaller communities, it is probable that the inspectors have been able to reach during the year the points of production and distribution of the food supply of more than 2,000,000 people. A small proportion of the agricultural community is not benefited by the inspection work, but since these communities are isolated and for the most part dependent upon home products, it is probable that the inspection work has been carried as far as is possible with the present force of inspectors and the appropriation available. Any further expansion of the work must be at the hands of the local health officers.

CITIES AND TOWNS VISITED AND INSPECTED 1910—1911.

CITY OR TOWN.	County.	Times Inspected.	Population 1910.
Albany.....	Delaware.....	1	2,116
Albion.....	Noble.....	2	1,580
Anderson.....	Madison.....	2	22,000
Angola.....	Steuben.....	2	2,750
Arcadia.....	Hamilton.....	1	1,250
Argos.....	Marshall.....	2	1,307
Atlanta.....	Hamilton.....	1	800
Attica.....	Fountain.....	2	3,800
Auburn.....	DeKalb.....	3	5,300
Aurora.....	Dearborn.....	3	4,410
Austin.....	Scott.....	2	398
Avilla.....	Noble.....	1	658
Batesville.....	Ripley.....	1	2,000
Bedford.....	Lawrence.....	2	8,716
Beckham.....	Greene.....	4	20
Bicknell.....	Knox.....	5	2,275
Birdseye.....	Dubois.....	1	500
Blackhawk.....	Vigo.....	1	110

CITIES AND TOWNS VISITED AND INSPECTED 1910-1911—Continued.

CITY OR TOWN.	County.	Times Inspected.	Population 1910.
Bloomfield	Greene	8	2,100
Bloomingsdale	Parke	1	580
Bloomington	Monroe	3	8,838
Bluffton	Wells	1	4,800
Boonville	Warrick	1	3,000
Borden	Clark	1	525
Boswell	Benton	1	950
Bowling Green	Clay	1	495
Brasil	Clay	9	9,340
Bremen	Marshall	2	2,000
Bringham	Carroll	1	448
Bristol	Elkhart	1	600
Broad Ripple	Marion	1	500
Brookville	Franklin	1	2,500
Brownsburg	Handricks	1	750
Brownstown	Jackson	1	2,100
Bunker Hill	Miami	1	750
Burrows	Carroll	1	200
Calvertville	Greene	1	25
Cambridge City	Wayne	2	2,000
Camden	Carroll	1	775
Campbellsburg	Washington	1	750
Cannelton	Perry	2	2,500
Carmel	Hamilton	1	580
Cartersburg	Hendricks	1	300
Cass	Sullivan	1	300
Cayuga	Vermillion	3	925
Centerville	Wayne	1	850
Charlestown	Clark	2	1,050
Chili	Miami	1	275
Cicero	Hamilton	1	1,700
Clay City	Clay	10	1,600
Claypool	Kosciusko	1	575
Clinton	Vermillion	7	6,229
Coal City	Owen	5	325
Columbia City	Whitley	3	2,050
Columbus	Bartholomew	2	8,815
Connersville	Fayette	1	7,738
Corydon	Harrison	2	1,700
Corydon Junct.	Harrison	2	25
Covington	Fountain	2	2,500
Crawfordsville	Montgomery	4	9,371
Cromwell	Noble	1	550
Culver	Marshall	1	750
Deer Creek	Carroll	1	120
Delphi	Carroll	1	2,500
Denver	Miami	1	850
Deputy	Jefferson	1	300
Dillsboro	Dearborn	1	600
Dugger	Sullivan	1	850
Dunkirk	Jay	1	3,187
Dunreith	Henry	1	200
Earl Park	Benton	1	750
East Chicago	Lake	1	19,098
Edinburg	Johnson	1	2,050
Edwardsport	Knox	1	750
Elberfeld	Warrick	1	400
Elkhart	Elkhart	4	19,232
Elkinsville	Brown	1	50
Ellettsville	Monroe	1	750
Elliston	Greene	1	28
Elora	Davies	12	1,000
Elwood	Madison	2	11,028
English	Crawford	1	700
Evansville	Vanderburg	4	69,647
Ewing	Jackson	1	750
Fairfield	Franklin	1	200
Fairmount	Grant	1	3,300
Farmers	Owen	2	100
Farmersburg	Sullivan	3	750
Ferdinand	Dubois	1	1,000
Fletcher	Fulton	1	20
Flora	Carroll	1	1,450
Fort Branch	Gibson	1	1,050
Fortville	Hancock	1	1,185
Ft. Wayne	Allen	3	63,933

CITIES AND TOWNS VISITED AND INSPECTED 1910-1911—Continued.

City or Town.	County.	Times Inspected.	Population 1910.
Fowler	Benton	1	1,600
Frankfort	Clinton	2	8,634
Franklin	Johnson	2	4,150
Freedom	Owen	7	325
Freelandville	Knox	1	600
French Lick	Orange	1	1,150
Galveston	Cass	1	650
Garrett	Dekalb	2	4,350
Gary	Lake	1	16,802
Goshen	Elkhart	5	8,514
Gosport	Owen	7	800
Grandview	Spencer	1	850
Greencastle	Putnam	4	4,000
Greenfield	Hancock	1	4,500
Greensburg	Decatur	1	5,420
Greentown	Howard	1	1,350
Hammond	Lake	4	20,925
Hanover	Jefferson	1	425
Harmony	Clay	1	1,080
Harrison	Dearborn	1	
Hartford City	Blackford	1	6,187
Heltonville	Lawrence	1	525
Henryville	Clark	1	480
Hillsboro	Fountain	2	600
Hillsdale	Vermillion	2	275
Hobart	Lake	1	2,000
Hobbs	Tipton	1	225
Howersville	Clay	1	175
Hubbell	Owen	1	
Huntertown	Allen	1	325
Huntingburg	Dubois	1	2,600
Huntington	Huntington	1	10,272
Indiana Harbor	Lake	1	
Indianapolis	Marion	13	233,650
Jamestown	Boone	1	700
Jasonville	Greene	2	2,500
Jasper	Dubois	1	2,000
Jeffersonville	Clark	2	10,412
Kennard	Henry	1	470
Kewanna	Fulton	1	1,200
Kingman	Fountain	2	450
Knightstown	Henry	3	2,050
Knox	Starke	1	1,800
Kokomo	Howard	2	17,010
Kolen	Greene	1	125
Lafayette	Tipton	3	20,081
LaFontaine	Wabash	1	700
Lagrange	Lagrange	2	1,900
Lapel	Madison	1	900
Laporte	Laporte	4	10,525
Larwill	Whitley	1	450
Lawrenceburg	Dearborn	4	4,500
Lebanon	Boone	2	5,475
Lewisville	Henry	1	510
Lexington	Scott	1	350
Liberty	Union	1	1,650
Liberty Center	Wells	1	351
Ligonier	Noble	1	2,325
Linton	Greene	4	5,906
Lisbon	Noble	1	110
Logansport	Cass	3	19,050
Lonetree	Greene	1	8
Loogootee	Martin	1	1,500
Lyons	Greene	2	1,000
McVille	Greene	1	30
Macy	Miami	1	425
Madison	Jefferson	3	6,934
Mareo	Greene	1	356
Marengo	Crawford	1	750
Marion	Grant	2	19,359
Martinsville	Morgan	3	4,600
Maxwell	Hancock	1	350
Metamora	Franklin	1	588
Michigan City	Laporte	2	9,027
Middlebury	Elkhart	1	690
Midland	Greene	1	175

CITIES AND TOWNS VISITED AND INSPECTED 1910-1911—Continued.

City or Town.	County.	Times Inspected.	Population 1910.
Milan.....	Ripley.....	1	475
Milford.....	Kosciusko.....	1	1,030
Milftown.....	Crawford.....	1	600
Milton.....	Wayne.....	1	860
Mineral.....	Greene.....	1	100
Mishawaka.....	St. Joseph.....	1	11,888
Mitchell.....	Lawrence.....	1	2,200
Monroeville.....	Allen.....	1	1,100
Montesuma.....	Parke.....	1	1,285
Montgomery.....	Davies.....	1	690
Monticello.....	White.....	2	2,450
Morristown.....	Shelby.....	1	680
Mount Vernon.....	Posey.....	2	5,563
Muncie.....	Delaware.....	3	24,005
Nappanee.....	Elkhart.....	1	2,500
Needham.....	Johnson.....	1	150
New Albany.....	Floyd.....	3	20,629
Newark.....	Greene.....	1	163
Newberry.....	Greene.....	6	625
Newburg.....	Warrick.....	1	1,425
New Carlisle.....	St. Joseph.....	2	650
New Castle.....	Henry.....	2	9,448
New Harmony.....	Posey.....	1	1,430
New Haven.....	Allen.....	1	1,150
Newport.....	Vermilion.....	2	700
Newton Stewart.....	Orange.....	1	90
Noblesville.....	Hamilton.....	2	5,073
North Madison.....	Jefferson.....	1	880
North Manchester.....	Wabash.....	1	2,500
North Vernon.....	Jennings.....	2	3,700
Oakland City.....	Gibson.....	2	2,100
Oaktown.....	Knox.....	1	650
Odon.....	Davies.....	3	1,090
Oolitic.....	Lawrence.....	1	1,200
Orleans.....	Orange.....	2	1,330
Osgood.....	Ripley.....	2	1,150
Owensburg.....	Greene.....	1	428
Owensville.....	Gibson.....	1	1,100
Oxford.....	Benton.....	2	1,150
Patoka.....	Gibson.....	1	700
Pendleton.....	Madison.....	1	1,600
Peru.....	Miami.....	4	10,910
Plainville.....	Davies.....	5	450
Plummer.....	Greene.....	1	25
Plymouth.....	Marshall.....	2	3,800
Portland.....	Jay.....	2	5,130
Poseyville.....	Posey.....	1	730
Princeton.....	Gibson.....	4	6,448
Quincy.....	Owen.....	1	275
Red Key.....	Jay.....	1	2,380
Rensselaer.....	Jasper.....	1	2,350
Richmond.....	Wayne.....	2	22,324
Riley.....	Vigo.....	1	500
Rising Sun.....	Ohio.....	1	1,513
Robison.....	Greene.....	1	40
Rochester.....	Fulton.....	2	4,000
Rockport.....	Spencer.....	1	2,970
Rockville.....	Parke.....	1	2,100
Rosedale.....	Parke.....	2	900
Rushville.....	Rush.....	1	5,000
Salem.....	Washington.....	2	2,050
Saline City.....	Clay.....	1	300
Sandborn.....	Knox.....	2	510
Sandborn.....	Scott.....	1	1,500
Scottsburg.....	Vigo.....	1	450
Seelyville.....	Clark.....	2	800
Seelysburg.....	Jackson.....	2	6,305
Shenandoah.....	Tipton.....	2	550
Shelburn.....	Sullivan.....	1	700
Shelbyville.....	Shelby.....	2	9,500
Shirley.....	Hancock.....	1	1,200
Shoals.....	Martin.....	1	1,015
South Bend.....	St. Joseph.....	7	53,648
Spencer.....	Owen.....	10	2,150
St. Joe.....	Dekalb.....	1	510
St. Meinrad.....	Spencer.....	1	875

CITIES AND TOWNS VISITED AND INSPECTED 1910-1911—Continued.

CITY OR TOWN.	County.	Times Inspected.	Population 1910.
Sullivan	Sullivan	8	4,000
Sunman	Ripley	1	500
Swayzee	Grant	1	1,350
Switsa City	Greene	2	620
Syracuse	Kosciusko	1	1,400
Tell City	Perry	2	3,000
Templeton	Benton	1	271
Terre Haute	Vigo	12	58,157
Tipton	Tipton	6	4,600
Trinity Springs	Martin	1	120
Troy	Perry	1	820
Underwood	Clark	1	225
Union City	Randolph	1	3,800
Utica	Clark	1	426
Valparaiso	Porter	3	6,987
Veederburg	Mountain	1	1,750
Vevay	Switzerland	1	1,660
Vincennes	Knox	4	14,895
Wabash	Wabash	3	8,687
Walkerton	St. Joseph	1	1,200
Walton	Parke	1	.....
Warrington	Hancock	1	200
Warsaw	Kosciusko	2	4,500
Washington	Daviess	4	7,864
Waterloo	DeKalb	1	1,350
Waveland	Montgomery	1	750
West Baden	Orange	1	1,000
Whiting	Lake	1	6,587
Williamsport	Warren	2	1,350
Winchester	Randolph	1	4,000
Winona Lake	Kosciusko	1	.....
Worthington	Greene	7	1,680
Youngs Creek	Orange	1	80
Youngstown	Vigo	1	110
Total population of cities and towns visited.....			1,288,726
Different cities and towns visited.....			280

A comparative study of sanitary conditions during the past five years shows many interesting facts, although on the face of the data tabulated, the results of the inspection work are in some cases not apparent. The condition of dairies is shown to have steadily deteriorated instead of improving. In 1907, for instance, 5.2 per cent. of the dairies visited were in excellent condition. In 1911, .5 per cent. were so listed. In 1907, 16.2 per cent. were in good condition, in 1911, 9.5 per cent. In 1907, 43.5 per cent. were listed as fair, in 1911, but 23.6 per cent. On the contrary while but 19.1 per cent. were poor in 1907, in 1911, 35.1 per cent. were so listed; 15.8 per cent. were bad in 1907 and 31.1 per cent. in 1911. These results can not by any possible interpretation bring satisfaction to the dairymen. On the contrary they subject them to very serious criticisms. While, as we have said over and over again, it is impossible for the State inspectors to solve the tremendous problem of a sanitary milk supply, and since therefore the

department assumes no credit, and shoulders no responsibility for such conditions, the widespread agitation for pure and clean milk which has now been going on for many years, should have produced a great improvement in the character of the milk supply. That it has not so resulted is convincing proof of the seriousness of the problem, and calls for renewed effort on the part of every health officer and aroused interest among consumers which will compel the dirty dairymen either to remodel his dairy and adopt new methods of doing business or give way altogether to the conscientious farmer who is intelligent and appreciative of his duty to the community he serves.

A tabulation of the results of grocery store inspection is quite satisfactory. The percentage of places found in good condition has increased from 30.9 per cent. in 1907 to 57.3 per cent. in 1911, while the number of places in fair condition has naturally decreased from 46.5 per cent. in 1907 to 35.2 per cent. in 1911. The number of places listed as poor has been reduced from 8.8 per cent. in 1907 to 4.5 per cent. in 1911.

The meat markets have made a similar satisfactory showing. The improvement of drug stores has been even more marked, and the bakeries and confectioneries have improved in character from a percentage of 40.5 good establishments in 1907 to 55.3 per cent. in 1911. The improvement of hotels and restaurants has not been so decisive although many places have been raised from the poor to the fair class as result of the work of the last five years.

COMPARATIVE STUDY OF SANITARY CONDITIONS IN 1907-1911.

INSPECTION.	Year.	Condition.				
		Excellent. Per Cent.	Good. Per Cent.	Fair. Per Cent.	Poor. Per Cent.	Bad. Per Cent.
Dairies.....	1907	5.2	16.2	43.5	19.1	15.8
	1908	1.4	14.8	44.1	26.8	12.7
	1909	1.0	20.2	39.5	30.2	8.5
	1910	0.0	13.7	42.9	24.3	19.0
	1911	0.5	9.5	23.6	35.1	31.1
Grocery stores.....	1907	4.2	30.9	46.5	8.8	1.4
	1908	2.8	45.5	46.1	4.9	1.75
	1909	4.8	53.6	35.6	5.3	1.0
	1910	3.8	60.3	30.8	4.6	.3
	1911	2.4	57.3	35.2	4.5	.3
Meat markets.....	1907	2.8	35.0	47.3	9.9	4.9
	1908	1.8	39.8	47.4	10.1	1.8
	1909	2.2	57.7	34.0	5.4	.5
	1910	3.4	58.8	32.0	4.8	.2
	1911	1.3	52.3	34.2	5.2	.5

COMPARATIVE STUDY OF SANITARY CONDITIONS IN 1907-1911—Continued.

INSPECTION.	Year.	CONDITION.				
		Excellent. Per Cent.	Good. Per Cent.	Fair. Per Cent.	Poor. Per Cent.	Bad. Per Cent.
Drug stores	1907	8.1	58.4	30.7	3.2	.0
	1908	5.4	74.5	15.8	1.5	.0
	1909	3.8	72.9	18.7	3.4	.8
	1910	2.2	80.6	13.6	3.0	.4
	1911	1.5	78.4	18.3	1.4	.08
Bakeries and confectioneries	1907	4.4	40.5	40.8	11.6	2.8
	1908	4.3	40.0	47.4	8.0	2.1
	1909	3.7	49.7	36.2	8.9	1.4
	1910	3.8	52.5	37.3	5.4	.8
	1911	2.6	55.3	35.6	5.9	.45
Hotels and restaurants	1907	4.5	34.8	40.5	18.0	3.2
	1908	2.0	34.6	48.9	11.4	1.6
	1909	1.3	32.8	47.2	16.1	2.2
	1910	.9	37.7	52.3	8.1	.8
	1911	.7	35.1	52.0	10.6	1.5

CONDEMNATION REPORTS.

The annual report for 1910 set out at length the method originated and successfully employed in the enforcement of the Sanitary Food Law. This system requires the inspector to report to the State Food and Drug Commissioner all unsanitary conditions which are so bad that they can not be dealt with by a verbal notice. Upon the receipt of these unsanitary inspection reports, a condemnation notice is issued by the State Food and Drug Commissioner establishing a time period before the expiration of which the repairs indicated in the notice must have been made. It is gratifying to have to report that while 567 places have been served with condemnation notices during the year, in not a single instance has it been necessary to prosecute the owner of the establishment for failure to make the improvements demanded. For the most part, the condemnation reports have been viewed by the owners of the business places as legal notices, as in fact they are, and the improvements demanded made promptly.

Of the 567 places condemned, 507 were so judged because of unsanitary conditions. Two hundred and forty-two condemnation notices were issued because of improper construction of the buildings utilized as food producing and distributing establishments. In many instances, as these figures show, condemnation notices have been issued both because of unsanitary conditions and improper construction. A study of the table attached, shows the restaurants to have received the greatest number of condemnations.

Grocery stores come second, but inasmuch as the number of grocery stores and restaurants inspected were in the thousands, the condition is not as bad as appears on the face of the tabulation. When, however, it is understood that 51 dairies were condemned and but 199 places in all were inspected, the milk producing establishments at once step into the most unenviable position among the places inspected.

CONDEMNATION REPORTS FROM OCTOBER 1, 1910, TO OCTOBER 1, 1911.

CLASSIFICATION.	REASONS FOR CONDEMNATION.		Total Number of Places Condemned.
	Unsanitary Conditions.	Improper Construction.	
Dairies.....	32	41	51
Grocery stores.....	73	35	92
Groceries and meat markets.....	48	14	48
Meat markets.....	68	20	68
Bakeries.....	47	23	53
Bakeries and confectioneries.....	5	2	6
Confectioneries.....	19	8	20
Restaurants.....	105	50	113
Hotels.....	13	8	16
Drug stores.....	21	7	22
Slaughter houses.....	15	9	16
Poultry houses.....	26	12	27
Fish markets.....	11	4	11
Canning factories.....	10	5	10
Creameries.....	1	1	1
Ice cream factories.....	4	1	4
Bottling works.....	1	1	1
Abattoir.....	1	0	1
Candy factory.....	1	0	1
Produce and poultry storeroom.....	1	0	1
Pasteurizing station.....	1	1	1
Fruit stores.....	2	0	2
Jelly factories.....	2	0	2
Totals.....	507	342	567

CIRCULAR LETTERS AND LETTERS OF INFORMATION.

The Food and Drug Commissioner is frequently called upon to interpret the Food, Drug and Sanitary laws for the benefit of the trade. In order that such rulings, which are not official and have no legal weight but do set out the interpretation of the law which is followed by inspectors and chemists in their work be promulgated, it is the custom of the department to publish circular letters and letters of information.

During the year a number of these letters have been promulgated for the purpose of meeting the conditions which have arisen in the enforcement of the laws and which the trade in general has not fully understood. These letters are as follows:

WARNING.**Bad Eggs.**

The Indiana Pure Food Law forbids the sale or offering for sale of eggs which are in any degree *decomposed, putrid or rotten*, by Paragraph 4 of Section 2 of the law, which reads:

An article shall be deemed as adulterated: In the case of food * * *

If it consists in any proportion of a filthy, decomposed, putrid or rotten animal * * * substance.

Section 4 makes it the duty of all peace and health officers to seize eggs found to be unwholesome and which are intended for sale or offered for sale.

Section 10 of the act provides that * * * any person, persons, firm or corporation violating any of the provisions of this act shall, upon conviction of the first offense, be punished by a fine of not less than \$10.00 nor more than \$30.00; for the second offense, by a fine of not less than \$25.00 nor more than \$100.00; and for the third and subsequent offenses by a fine of \$100.00 and imprisonment in the county jail for not less than *thirty nor more than ninety* days.

Inspectors of the Food and Drug Department of the State Board of Health and all county, city and town health officers are instructed to enforce these provisions of the law.

Egg producers, -dealers and shippers will take notice that the sale of bad eggs or of stale or storage eggs as fresh eggs is in violation of the law and that prosecutions will be instituted wherever evidence of violations can be secured.

H. E. BARNARD,

State Food and Drug Commissioner.

Indianapolis, Ind., March 9, 1911.

NOTICE TO ICE CREAM MANUFACTURERS.

We beg to call to your attention the standard for ice cream which is in force in this State.

"Ice cream is a frozen product containing not less than 8 per cent. of butter fat and 18 per cent. of milk solids, with the addition of sugar (sucrose) and with or without natural flavoring and not to exceed 7-10 of 1 per cent. of gelatine or vegetable gums.

"Fruits, nuts, candied and preserved fruits and nuts, chocolate and other similar products shall be classed as flavorings, and ice cream containing such ingredients shall conform to the standard above specified."

It has come to our notice that ice cream containing added color is being sold without being labeled so as to indicate that fact to the consumer.

The fifth paragraph of the Pure Food Law provides *that an article shall be adulterated if it is * * * colored * * * whereby it is made to appear better or of greater value than it really is.*

The addition of any color to ice cream which makes it appear richer in butter fat is in violation of the Pure Food Law unless the fact of the addition of the color is clearly set forth. The use of fruit colors such as counterfeited the color of strawberry, cherry, peach, etc., is not allowed unless the goods are marked "imitation," and declare the presence of the color.

H. E. BARNARD,
State Food and Drug Commissioner.

CIRCULAR LETTER No. 12.

Subject: Artificial Color.

Druggists, Confectioners and Soda Venders:

Owing to the fact that fruit syrups, crushed fruits, ice creams and soda preparations being supplied the trade are prepared with artificial colors, it will be necessary to display in a conspicuous place on the soda fountain a notice reading as follows:

"The Crushed Fruits, Fruit Syrups, Ice Creams and Soda Preparations Served Here Are Artificially Colored."

The printed letters shall be at least one inch in height, in black-faced Gothic type, and shall be plainly visible from all parts of the room where goods are served.

The Pure Food Law prohibits the sale of goods which have been artificially colored where such color is used for the purpose of making the product appear better or of better value than it really is, or of counterfeiting the appearance of natural food products, and goods so colored can not be legally sold except when declaration of that fact is plainly made.

H. E. BARNARD,
State Food and Drug Commissioner.

CIRCULAR LETTER No. 13.

Subject: Unsound Fruits and Vegetables.

The attention of farmers, gardeners, hucksters and other persons producing or dealing in fruits and vegetables is called to Section 2 of the Pure Food Law, which prohibits the sale of food which consists in any proportion of decomposed, putrid or rotten vegetable substances, whether manufactured or not. This section plainly holds the farmer or merchant who sells unsound fruit, such as apples, peaches and small fruits, tomatoes, melons and vegetables of every description, liable for violation of the Pure Food Law. It applies with equal force to the farmer who sells his tomatoes, corn or fruit to the canning factory as to the commission man or retail merchant.

County, city and town health officers, State Food Inspectors, and all other officers whose duty it is to enforce the Pure Food and Sanitary Food Laws, will be governed by this notice in regulating the sale of fruits and vegetables.

H. E. BARNARD,
State Food and Drug Commissioner.

CO-OPERATION OF HEALTH OFFICERS.

In order to bring more closely to the attention of health officers the fact that they are deputy food inspectors and charged with the enforcement of the food and sanitary laws, the department has prepared blanks and forms for their use. Many health officers have made use of these forms and are reporting each month the results of their work.

The following letter was sent to health officers together with the blanks, and has resulted in a decided increase of interest in the work:

COUNTY, CITY AND TOWN HEALTH OFFICERS.

TAKE NOTICE.

The pure food and sanitary laws make all health officers Deputy Food Inspectors of the State Board of Health. This wise provision is expected to build up in the State a corps of skilled men who are sworn to enforce the food laws, and places in *your* hands the regulation of your own markets.

The State Board of Health keeps several inspectors constantly in the field, but as each has more than twenty counties to visit, it is obviously impossible for them to compel thorough compliance with the laws throughout their territory. *This is your duty.* A State inspector is at your service whenever you may wish to train an assistant, solve a special problem, or yourself to take up inspection work. But the inspector must be considered an *assistant to you* and *not* held personally responsible for law enforcement in your jurisdiction.

The State Board of Health wishes you to become an expert in the enforcement of sanitary and food laws and will supply you with instruction slips, blanks, inspection cards, etc., which you may have occasion to use.

It urges the selection of some competent layman to carry out this work as your deputy and will give him sufficient training to make him proficient in his duties; the training will be given either at home or in Indianapolis.

In order that the Board may know the results of your work, please render monthly reports to the head office, showing the number of inspections made, the conditions found, notices served and prosecutions instigated. The State Board will furnish you with blanks for this purpose.

Address communications concerning food and drug inspection to

FOOD AND DRUG DEPARTMENT,
State Board of Health, Indianapolis, Ind.

REPORT OF MONTHLY INSPECTIONS.

County of.....City, Town of.....

H. E. Barnard, Food and Drug Commissioner, Indianapolis, Indiana.

DEAR Sir—During the month of..... 191.....

I have made sanitary inspections as follows:

	No. Inspected	No. Excellent	No. Good	No. Fair	No. Poor	No. Bad
Dairies.....						
Grocery stores.....						
Meat markets.....						
Drug stores.....						
Bakeries and confectioneries.....						
Hotels and restaurants.....						
Miscellaneous.....						
Total.....						

I have filed..... notices of condemnation for failure to comply with the sanitary food law, with these results:

I have filed..... suits for violation of the pure food and drug law, with these results:

I have filed..... suits for violation of the sanitary food law, with these results:

Remarks:

Signed.....

.....191....

Title.....

REPORT
FROM
WATER LABORATORY.

THE WATER SUPPLY OF INDIANA.

During the year ending September 30, 1911, 1,053 samples of water were analyzed. Five hundred and seventy-three samples were from shallow wells; 293 were deep well waters, that is water lying below an impervious stratum of the earth, 60 samples were spring waters, 28 streams and 21 ponds, 40 samples were from cistern supplies, 19 were sewage samples and 19 of miscellaneous origin. The sewage samples were sent in from institutions or brought to the laboratory by the deputies from the office of the State Fish Commissioner. Of the total number of samples examined, 622 were in good condition, 295 were bad and 136 were of doubtful quality.

One hundred and eighty-one of the samples were from public supplies. Eighty-eight of these samples were from deep wells, 14 were shallow well supplies, 28 streams, 21 ponds, 11 from springs and 19 from miscellaneous sources. Of the 88 deep well supplies, 76 were in good condition, two were bad and 10 were of doubtful quality. Of the 14 shallow well supplies, 13 were in good condition and one was bad. Twenty-one of the 28 stream supplies were in good condition, one was bad and six were of doubtful quality. All of the 11 spring supplies were of good quality, 16 of the 21 pond waters were good, five were doubtful.

The public water supplies are, for the most part, of satisfactory quality, although the occasional doubtful samples indicate the necessity for the continued study of such supplies. Only four bad samples were reported in the total 88 samples examined.

Most of the samples analyzed were from private supplies. Eight hundred and seventy-two such samples were examined, of which 559 samples were from shallow wells, 205 from deep wells, 49 from springs, 40 from cisterns. One hundred and sixty-six of the deep well samples were in good condition while 18 were bad and 21 doubtful. It is probable that samples of these bad and doubtful waters were in reality from shallow wells although the depth of the supply indicated the contrary. Two hundred and fifty-two of the 559 shallow wells were in good condition, 232 were bad and 75 were of doubtful quality. Since the doubtful waters will undoubtedly enter the bad classification within the near future, this number should be added to the list of bad. When this is

done it is seen that 55 per cent. of all the shallow water samples were unsuitable for drinking and domestic purposes. This percentage coincides almost exactly with that obtained as the result of the work of other years. Twenty-five of the cistern waters were of good quality, 13 were bad and two doubtful. The bad samples are not typical cistern waters but derived from leaky cisterns which receive ground water from the privies and sink drains of back yards.

A special study has been made of waters used as schoolhouse supplies. Twenty-five of these supplies are from deep wells and 29 from shallow wells. Twenty-one of the 25 deep well waters are in good condition, three were classed as bad and one as doubtful. Twenty-four of the shallow well waters are in good condition, four bad and one doubtful. These results indicate, for the most part, a satisfactory condition of the well supply. There are, however, too many bad examples to warrant the assumption that the schoolhouse well is not occasionally polluted.

Another study has been made of the waters sent in from supplies suspected of having caused typhoid fever in the families using the water. Twenty-two of these waters were from deep wells, 131 from shallow wells, 17 from cisterns and eight from springs. Twenty of the deep well supplies were in good condition, none were bad and but two were doubtful. These results practically eliminate the deep well as a source of typhoid fever. On the contrary 59 of the shallow well samples were bad, 17 doubtful and but 50 were in good condition. In other words, classing the bad and doubtful waters together, 62 per cent. of the shallow wells located at the homes of typhoid fever patients were polluted, and, without doubt, many of these waters were responsible for the typhoid in the family. The percentage of bad waters in such cases is so very high that the duty of the health officer and attending physician to investigate the water supply is manifest and if there is any suspicion that the supply may be polluted, the well should be immediately closed until an analysis establishes the good character of the water. Six of the 17 suspected cistern waters were bad and one was of doubtful quality. The cistern, which ought to be a satisfactory source of supply, is by our analyses shown to be very subject to pollution and, as is the case with the shallow well water, cistern water used by a family which is bearing a burden of typhoid fever should always be looked upon as dangerous until shown otherwise by analysis.

~~During the summer of 1911 a very extensive summer house~~

1000

During the summer of 1911 a very extensive survey has been made of the Ohio River. The results of this survey are included elsewhere in this report.

During the year a number of studies have been made of the water supplies of different cities and towns. These supplies have been investigated by the department and the results of the investigations as set forth in the reports here follow :

BLOOMINGTON, IND., January 5, 1911.

Mr. H. E. Barnard, State Board of Health, Indianapolis, Ind.:

DEAR SIR—In accordance with the conversations which Professor Robert E. Lyons has had with you, I should be glad to have your department investigate the proposed plan for a water supply for Indiana University, and to report to me your findings.

With thanks for your courtesies, I am, very truly yours,

W. S. BRYAN.

INDIANAPOLIS, IND., January 6, 1911.

W. S. Bryan, President Indiana University, Bloomington, Ind.:

MY DEAR PROFESSOR BRYAN—In accordance with your request, Mr. J. H. Brewster of this department has visited Bloomington and made a survey of the watershed proposed to be utilized in the development of the water supply for Indiana University. I herewith take pleasure in submitting his report. Yours very truly,

H. E. BARNARD,
Chemist.

NEW WATER SUPPLY FOR INDIANA UNIVERSITY, BLOOMINGTON, IND.

The city of Bloomington obtains its water supply from impounding reservoirs which are fed by springs and the land run-off from an adequate catchment basin, but owing to numerous leaks in the dam and cracks in the limestone rock stratum, it has been found almost impossible to retain enough water to supply the city during dry seasons. Indiana University, now taking its water from the city supply, has suffered considerably from the inadequacy of this supply and is now endeavoring to relieve this condition by obtaining a supply of its own. For this purpose, a small catchment basin about one mile east of the University campus, covering about three-tenths of a square mile, and surrounding a deep ravine in such a way that practically all of the rainfall can be collected in the reservoir, has been utilized. From a sanitary standpoint this catchment basin is ideally located, as there is only one farmhouse from which seepage could possibly enter the water supply. The rest of the catchment basin is nearly all controlled by the University. The surface soil is gravel and dirt of apparently five feet in thickness. Below this is about nine feet of weathered rock, with an underlying stratum of knobstone rock. This knobstone

rock will serve as the foundation and walls of the proposed storage basin except the upper five feet which is in limestone. The knobstone rock is almost entirely free from cracks, and if any appear they are but small ones, filled with clay, which makes a very good cementing material when wet. The limestone stratum is practically free from cracks.

The maximum rainfall for this section of the country is about 54 inches, the mean about 44 inches and the minimum about 30 inches. Estimating that only one-fourth of the minimum fall of 30 inches is collected in the reservoir, 100,000 gallons will enter it daily, and as the present consumption is from 25,000 to 30,000 gallons daily, the quantity of water received will be entirely adequate for present and future needs. The proposed dam, which is nearly completed, is to be 25 feet high, thus giving the reservoir a storage capacity of 15,000,000 gallons, or nearly two years' supply at the present maximum consumption. The University now has a rectangular concrete reservoir with a capacity of 120,000 gallons, into which the supply water is pumped, and from which the University is supplied by gravity pressure, at about 100 feet static head, but as the line is 6-inch pipe the friction cuts this head down to a true static head of about 70 feet. This is sufficient to supply water to any point on the campus. With the installation of the new storage reservoir, the water will be pumped into the present basin and supplied by gravity to the University in the same way. This means of obtaining a water supply for Indiana University is undoubtedly the most feasible one at hand, as well water is almost impossible to get in sufficient quantity.

The limestone formation which has caused the trouble for the city supply dips to the west and the valley and proposed reservoir lie to the east below its level, thus removing from consideration the possibility of similar faults and cracks.

INVESTIGATION OF THE WATER SUPPLY AT EDINBURG, IND.

A sample of water taken from the pump well of the Edinburg Water and Light Company and on January 6th submitted to the State laboratory for examination was found to contain a large amount of algæ growth, known as *Leptothrix*. Otherwise the water was satisfactory from a sanitary standpoint, and it was suggested that the algæ be removed by the use of copper sulphate. As the condition had reached such an advanced stage that the local authorities did not care to give the treatment, it was requested by Dr. W. W. Wright, City Health Officer of Edinburg, that the State Board of Health visit Edinburg and treat the water. In accordance with this request, on January 16th, the local conditions were looked into very carefully and it was found that the sanitary surroundings of the well and pumping station were very unsatisfactory and that the entire system was almost completely filled with algæ.

The water supply is taken from a shallow well 20 feet deep and 18 feet in diameter and located about 20 feet from the pumping station, which carries at this time of year a constant depth of about eight feet of water, but in the summer time, when the river is low, the static head is lowered to a depth of about one foot, which shows that the source of the supply is river water, which at this point seeps through the ground.

The well is dug through about eight feet of gravel and then into quicksand and the surface is covered with cinders taken from the water-works boilers. About 50 feet from the well is an abandoned outhouse, which was ordered to be removed immediately. The Naomi canning factory, established about six years ago, runs its refuse into a blind well located about 100 feet from the supply well on the upstream side. As this blind well which received the refuse matter is dug to the same depth as the well supplying the city with water, it is entirely probable that this refuse seeps through the ground and enters the city water. As the stream pollution laws cover this point, steps should be immediately taken to remove this source of contamination.

Prior to the time of building the canning factory, the water-works had had no trouble with algae growth, but shortly after this refuse matter was allowed to enter the ground so close to the well, formations of algae began to appear, and since that time the system has never been free from it. An examination of the well showed that there were large quantities of this growth covering the entire lining of the well, which is of brick, and the iron intake pipes were covered to a thickness of about 10 inches. It was found that this growth had gotten into the water mains and worked its way into the service lines to such an extent that many have become entirely stopped up, preventing the city supply being used for domestic purposes and for toilets.

The water is pumped from the well into the standpipe, which is 16 feet in diameter and 50 feet high, and furnishes domestic pressure by gravity of about 47 pounds. An examination was made of this standpipe and it was found to be almost completely lined with the same growth. The water in the well and the standpipe can be treated and the algae removed with little difficulty, but its removal from the water mains and surface lines will be a very difficult proposition, and inasmuch as *Leptothrix* lives on iron and lives principally in the dark, it is very necessary that it be entirely removed in order to prevent future development. If this is done and the algae then kept from the supply well, the city will have no more trouble. In order to keep it from the supply well, it will be necessary to clean up the unsanitary conditions surrounding it, which seems to be the source of trouble.

The most advisable way of removing the algae from the water mains and service lines is to flush them out through the fire plugs and dead ends and also through each individual service line, and in this way remove as much of the algae as possible. After this is done the water coming from the supply well should be treated with a heavy dose of copper sulphate, probably a strength of 1 to 1,000,000. This treatment should continue for a period of forty-eight hours. All parts of the system should be flushed constantly for the first twenty-four hours in order that the copper sulphate solution will be thoroughly distributed. The water should stand in the pipes for the next twenty-four hours to kill the growth and after this time every fire plug and service tap should be thoroughly drained for another twenty-four hours, in order to remove all the copper sulphate and dead algae from the lines.

While this treatment is being carried on, the greatest care should be taken by the city authorities and the citizens of Edinburg that none of the

water from the city mains be used for drinking or cooking purposes. It should be only used for manufacturing purposes where it does not come in contact with food. This work should be carried on under the supervision of an experienced man in order that the proper amount be fed.

The cleaning of the standpipe can be easily done by shutting it off from the water mains and treating the water which it contains with a heavy dose of copper sulphate and then emptying it into the sewer, and thus preventing it from going into the mains.

The cleaning of the supply well should be done by screening out all the algæ that can be removed and then treating the water with the same strength of copper sulphate.

Owing to the extreme cold weather it was inadvisable to start the work on the date arranged for, but it should be done as soon as possible if the water supply is to be maintained.

Respectfully submitted,

J. H. BREWSTER.

INDIANAPOLIS, May 1, 1911.

Dr. W. W. Wright, Health Officer, Edinburg, Ind.:

DEAR DR. WRIGHT—At the request of your board on April 11, 1911, I visited Edinburg for the purpose of making a sanitary survey of the conditions surrounding the water supply of your city. An inspection of the supply was made by Mr. J. H. Brewster on January 16, 1911, at which time he made the following report and recommendations:

"A sample of water taken from the pump well of the Edinburg Water and Light Company and on January 8th submitted to the State Laboratory for examination, was found to contain a large amount of algæ growth known as *Leptothrix*. Otherwise the water was satisfactory from a sanitary standpoint and it was suggested that the algæ be removed by the use of copper sulphate. As the condition had reached such an advanced stage that the local authorities did not care to give the treatment, it was requested by Dr. W. W. Wright, City Health Officer of Edinburg, that the State Board of Health visit Edinburg and treat the water. In accordance with this request, on January 16th the local conditions were looked into very carefully and it was found that the sanitary surroundings of the well and pumping station were very unsatisfactory and that the entire system was almost completely filled with algæ.

The water supply is taken from a shallow well twenty feet deep and sixteen feet in diameter and located about twenty feet from the pumping station, which carried at this time of year a constant depth of about eight feet of water, but in the summer time when the river is low, the static head is lowered to a depth of about one foot, which shows that the source of the supply is river water which at this point seeps through the ground. The well is dug through about eight feet of gravel and then into quicksand and the surface is covered with cinders taken from the water-works boilers. About fifty feet from the well is an abandoned outhouse, which was ordered removed immediately. The Naomi canning factory, established about six years ago, runs its refuse into a blind well located about 100 feet from the supply well on the upstream side. As this blind well

which received the refuse matter is dug to the same depth as the well supplying the city with water, it is entirely probable that this refuse seeps through the ground and enters the city water. As the stream pollution laws cover this point, steps should be immediately taken to remove this source of contamination.

Prior to the time of building the canning factory, the water works had had no trouble with algæ growth, but shortly after this refuse matter was allowed to enter the ground so close to the well, formations of algæ began to appear, and since that time the system has never been free from it. An examination of the well showed that there was large quantities of this growth covering the entire lining of the well, which is of brick, and the iron intake pipes were covered to a thickness of about ten inches. It was found that this growth had gotten into the water mains and worked its way into the service lines to such an extent that many have become entirely stopped up, preventing the city supply being used for domestic purposes and for toilets.

The water is pumped from the well into the standpipe, which is sixteen feet in diameter and fifty feet high, and furnished domestic pressure by gravity of about forty-seven pounds. An examination was made of this standpipe and it was found to be almost completely lined with the same growth. The water in the well and the standpipe can be treated and the algæ removed with little difficulty, but its removal from the water mains and surface lines will be a very difficult proposition, and inasmuch as *Leptothrix* feeds on iron and lives principally in the dark, it is very necessary that it be entirely removed in order to prevent future development. If this is done and the algæ then kept from the supply well, the city will have no more trouble. In order to keep it from the supply well, it will be necessary to clean up the unsanitary conditions surrounding it, which seems to be the source of trouble.

The most advisable way of removing the algæ from the water mains and service lines is to flush them out through the fire plugs and dead ends and also through each individual service line and in this way remove as much of the algæ as possible. After this is done the water coming from the supply well should be treated with a heavy dose of copper sulphate, probably a strength of 1 to 1,000,000. This treatment should continue for a period of forty-eight hours. All parts of the system should be flushed constantly for the first twenty-four hours in order that the copper sulphate solution will be thoroughly distributed. The water should stand in the pipes for the next twenty-four hours to kill the growth, and after this time every fire plug and service tap should be thoroughly drained for another twenty-four hours in order to remove all the copper sulphate and dead algæ from the lines.

While this treatment is being carried on, the greatest care should be taken by the city authorities and the citizens of Edinburg that none of the water from the city mains be used for drinking or cooking purposes. It should be only used for manufacturing purposes where it does not come in contact with food. This work should be carried on under the supervision of an experienced man in order that the proper amount be fed.

The cleaning of the standpipe can be easily done by shutting it off from the water mains and treating the water which it contains with a

heavy dose of copper sulphate and then emptying it into the sewer and thus preventing it from going into the mains.

The cleaning of the supply well should be done by screening out all of the algæ that can be removed and then treating the water with the same strength of copper sulphate.

Owing to the extreme cold weather it was inadvisable to start the work on the date arranged for, but it should be done as soon as possible if the water supply is to be maintained."

Following this report the suggestion made by Mr. Brewster that the well and standpipe be cleaned and the water treated with copper sulphate, was carried out with favorable results. The improved condition, however, did not long continue. *Leptothrix* again appeared in the well and standpipe, and within the last month has become a decided nuisance, not only because of the decomposing algæ, but also because of its tendency to discolor the water and clog the lines. At the time of my inspection of the plant, the sides of the well were thickly covered with *Leptothrix*, portions of which had already begun to decay. It was apparent that the water and the soil is thoroughly impregnated with this algæ and that it is impossible to kill or remove it permanently. I concur in the report of Mr. Brewster that the sanitary surroundings of the well and pumping stations are very unsatisfactory. The location of the well is such that unless very expensive filling operations are carried on, it will always be surrounded with stagnant water. Furthermore the occupation of the ground about the pumping station for business purposes is increasingly dangerous to the water supply, and it is only a question of time when all of the water in the adjacent territory will become so polluted as to be unsuitable for use except after filtration.

An analysis of the water from the stagnant pond fifty feet from the well shows *B. coli*, the index of fecal contamination, to be present. It is probable that this condition obtains constantly. A cesspool full to overflowing is maintained within forty feet of the well, the water level in which is higher than the water level in the well itself. These conditions seriously endanger the water supply and should not longer be tolerated.

After a careful study of the conditions surrounding the supply, I am forced to the conclusion that the present well should be abandoned and the supply sought elsewhere where the sanitary conditions are and will continue to be satisfactory. It is probable that an abundant water supply can always be found in the gravel beds which lie along the Blue River.

The analyses of various samples of water collected from Blue River one-half mile north of the well—water taken from the 30-foot well owned by Bud Gibson, water from the present city well and water from the test well driven fifteen feet by the side of the present well—show the samples to be very similar in composition and undoubtedly to be derived from the same source. A slight difference in hardness is noticeable, and the nitrate content varies somewhat, being the highest in the sample from the well of Bud Gibson.

After a new well is driven, care should be taken to kill completely the algæ now growing in the standpipe and mains in order that the new supply may not be inoculated and itself contaminated by *Leptothrix*.

The only alternative is to go to Blue River for the city supply. At present this river shows evidence of contamination by sewage, and in the event that it is utilized as a water supply, it should be filtered before being pumped to the mains. It is probable, however, that the filtration system would be more expensive than a series of driven wells. It is suggested that in view of the engineering problems which must be met and solved before any action can be definitely taken by the city, the services of a competent engineer should be secured.

If we can render any further assistance to you we shall be very glad to do so.

Yours very truly,

H. E. BARNARD,
Chemist, Indiana State Board of Health.

MADISON, August 3, 1911.

Dr. J. N. Hurty, Indianapolis, Ind.:

DEAR SIR—The Madison School Board has decided to install for drinking water in the schools proper filters. Our supply of water is from the Ohio River and is pumped into the mains without filtration. I realize that for large pumping stations in charge of experts a sand filter with coagulant is safe and most practicable. However, where a small filter is to be installed for drinking purposes only, would a filter having thirty inches of sand, filtering surface twenty-eight to thirty inches in diameter and flow of twenty gallons per minute and provided with alum coagulant give as safe water as an adequate stone filter? In answering the question consider that an average school janitor has charge of the filter. In either case would the water be safe for drinking? Would a sand filter without coagulant be a safe source of drinking water?

Hoping to hear from you at an early date, I am,

Yours sincerely,

DONALD DUSHANE,
Superintendent Madison Schools.

INDIANAPOLIS, August 5, 1911.

Donald DuShane, Superintendent Madison Schools, Madison, Ind.:

DEAR SIR—Your letter of the 3d inst., addressed to Dr. J. N. Hurty, has been referred to me for reply.

The situation facing you is a serious one and I somewhat doubt the advisability of giving you advice without a more definite knowledge of conditions than I now have. As a general proposition the small filter is satisfactory only as a clarifier. Under exceptional conditions it is probable that the effluent would be good from a bacterial standpoint, but since ideal conditions are hard to maintain it is very doubtful whether the installation of filters such as you have in mind would produce the desired results. The addition of alum for the purpose of forming a coagulant is always inadvisable except in the hands of trained men. In the case of a turbid water the tendency of a man in charge of the filter would be to add an excess of alum, which would produce an acid water, irritant in its

action. What Madison needs is a modern filtration system, and in my opinion any makeshifts such as small filters will in the long run prove to be unsatisfactory.

Yours truly,

H. E. BARNARD,
Chemist Indiana State Board of Health.

MADISON, August 14, 1911.

Dr. Hurty, Indianapolis, Ind.:

DEAR SIR—The following is an extract from the letter of Mr. Jay Cravens as to our water: "The filtered water at Mr. Powell's residence" (this water is run through a stone filter such as we contemplated installing in our schools) "showed up fine, not a bacteria present and no coli. The filtered water at the school had a higher bacteria count than the tap water, but at the time of taking the samples I was doubtful of the results because it had not been used for some time and the filter was therefore more of a breeding place," etc. Mr. Cravens is familiar with the type of filter the school board has planned to install here and with the type of stone filter we contemplated until adversely advised by your office. I should like very much to have an opinion from you based on Mr. Cravens' local knowledge and on tests of water from properly cleansed sand and stone filters of the type contemplated, which water we can send you.

Also, if you have copies for distribution I should like to have a copy of the State health laws and of the last report of the Health Board.

Thanking you for the great assistance received from your department, I beg to remain,

Sincerely yours,

DONALD DUSHANE,
Superintendent.

INDIANAPOLIS, August 15, 1911.

Donald DuShane, Superintendent Madison Public Schools, Madison, Ind.:

DEAR SIR—Your letter of the 14th inst., addressed to Dr. J. N. Hurty, has been referred to this office for reply.

Under separate cover we are sending you a copy of the last report of the State Board of Health.

It is a very difficult matter to make bacterial examinations of water samples collected and shipped during the summer time, as the bacterial counts during the summer are higher when the samples are received at this laboratory than when the waters are collected. We shall, however, if you desire, be glad to co-operate with you in making a thorough test of the filters. As a matter of fact the use of small filters has been studied for years by many investigators, and while stone filters of certain approved types will remove practically all bacteria while operated under the most improved conditions, they can not be depended upon day in and day out, simply because it is impossible to give them proper attention.

In the event that you wish to submit samples of water, I believe it

advisable to make daily tests from a period of say thirty days. The only expense to you will be the cost of expressage on the containers and the samples.

Awaiting your reply and assuring you of our desire to serve you, I am,
Yours truly,

H. E. BARNARD,
Chemist Indiana State Board of Health.

MADISON, August 17, 1911.

Mr. H. E. Barnard, State Chemist, Indianapolis, Ind.:

DEAR SIR—Your letter of the 15th inst. is at hand in which you very kindly offer to test water from various of our filters for a period of about thirty days. If you approve we should like to send samples of sand-filtered water, stone-filtered water, city water from the vicinity of each filter and school cistern water. Will you kindly send as soon as possible enough bottles to start the test, together with suggestions and directions, to D. DuShane, Superintendent of Public Schools, Madison, Ind.? Send collect, via Adams Express Co.

Thanking you for your prompt attention to this, to us, vital matter, I am,

Yours sincerely,

DONALD DUSHANE,
Superintendent.

INDIANAPOLIS, August 18, 1911.

Donald DuShane, Superintendent Madison Public Schools, Madison, Ind.:

DEAR SIR—In response to your request of the 17th inst., I am sending you six cases which contain six sterile bottles. My suggestion would be that every third day you send in one of these cases holding two samples of the sand-filtered water, two of the stone-filtered water and two of the city water to which you refer in your letter. In order that the work may be of value these samples must reach us ice cold. The cases should therefore be packed in ice and shipped to us at such time so that they may be delivered to the laboratory before the close of the day. When you have used all the cases we should be glad to send you others.

Carefully mark each bottle so that we may have complete data concerning every sample.

Yours truly,

H. E. BARNARD,
Chemist Indiana State Board of Health.

INDIANAPOLIS, September 11, 1911.

Mr. Donald DuShane, Superintendent, Madison, Ind.:

DEAR MR. DUSHANE—We have completed the analyses of the samples of water sent in by you for bacterial analyses and report the findings as follows:

	8-24	8-29	8-30	9-5	9-8
Tap water	325-400	525-380	70-30	300-150	Plates melted.
Tap water	270-350	360-95	5-20	140-180	Plates melted.
Stone filter	20-0	0	0-5	0	Plates melted.
Stone filter	0-0	0	0-0	0	Plates melted.
Sand filter	0	400-425	40-30	40-55	Plates melted.
Sand filter	0	380-410	20-10	45-30	Plates melted.

These tests were made in duplicate, and while the work has not been carried on sufficiently long to be considered as conclusive evidence of the efficiency of the filters, yet the results are so uniform in their character that they are without doubt suitable for your purpose, inasmuch as they determine the efficiency of the stone filter. All samples of tap water showed *B. coli* to be present. No *B. coli* were found in the water which had passed through either the sand or stone filters. The sand filter removed all bacteria in the first set of samples, but later samples showed bacterial counts but slightly below that of the raw river water.

The stone filter purifies the water very satisfactorily, and if in continued use it will produce results obtained on these set of samples, it will no doubt furnish potable water. As I have above indicated, the great objection to the use of the smaller filters is the very great probability that they will not be properly cared for and cleaned, as they must be to insure continued efficiency.

Unfortunately, the plates inoculated with the last series of samples "melted." We are therefore unable to report results on these samples.

A summary of the work leads me to the following conclusions:

First. The tap water of the Madison city supply is wholly unsuitable for drinking and domestic purposes in its present condition.

Second. The sand filter of the type used in this test does not materially reduce the bacterial count and is not to be depended upon to purify the water sufficiently to make it potable.

Third. Stone filters of the type used in this test when properly cared for reduce the bacterial count to a minimum and remove all *B. coli*.

Yours truly,

H. E. BARNARD,
Chemist.

THE WATER SUPPLY AT AURORA.

Upon receipt of bacterial samples from the Indiana Public Service Company at Aurora, Indiana, an examination of which showed an unfavorable condition of the water, more samples were asked for and sent in to the laboratory. The results of the first two samples analyzed are shown in Table A. The second set of samples, the results of which are shown in Table B, were also unsatisfactory, both filter effluents showing gas and a high bacterial count. It was recommended to the Water Company that the water be boiled for drinking purposes until better results were obtained.

Upon receipt of the second report, the Water Company requested an investigation of the conditions at their pumping plant and water supply, which was made June 6, 1911. Before this investigation was made a third set of samples was analyzed. The results, as shown in Table C, were not satisfactory.

The water is taken from an intake in the Ohio River about 180 feet from the shore line, when there is an 8-foot stage at Cincinnati. The average daily pumpage is about 300,000 gallons. The water is lifted by a centrifugal pump, coagulant being added at the discharge, to two large wooden tanks, their combined capacity being 100,000 gallons with a total settling capacity of about eight hours.

From the settling tanks the water flows on the filters, which are of the Jewell type, with mechanically operated agitator, revolving prongs doing the work. The average run of these filters is from three to five hours. The water there flows from the filter to the clear water reservoir with 50,000 gallons capacity. At this point the water is pumped to a steel tank 280,000 gallons capacity which is located on one of the high hills.

The trouble at this plant seems to be the inefficiency of the filter, and this is largely due to the method of mixing and regulating the application of the coagulant. The sulphate of iron tank is about six feet in diameter and seven feet deep, with a capacity of 1,470 gallons. The lime solution tank is six feet in diameter and sixteen feet deep, capacity 3,370 gallons.

There are no regulating devices on either tank and therefore no knowledge of the amounts of chemicals used is obtainable. An amount of lime, weight not known, is mixed and drained into the lime solution tank below. When the tank is started the attendant throws sulphate of iron in a small solution box and at various intervals adds additional small quantities, the weight at no time being known. The attendant uses his own judgment as to the proper amount of material to mix and add. The entire operation is uncontrolled and unchecked.

Before any steps were taken in the matter two more sets of samples were analyzed, the first being taken by myself at the time of the investigation, June 7, 1911, while the second was sent in July 15, 1911. The first of these, Table D, showed fairly good counts, but coli was present in both filter effluents. A sample taken at a tap in town showed a lower count with gas present. The last set analyzed showed fair counts with coli present in the effluent from filter 1 and absent in filter 2, while a town tap gave coli present.

The town has a population of 4,400 and about 450 water services, which supply about half the people. While there is no unusual amount of sickness at present, the public water supply is liable at any time to be the source of an epidemic. Since the effluent to all appearances is a good drinking water, that is, as far as taste and turbidity is concerned, and is used for all drinking and domestic purposes, it is recommended that a hypochlorite of lime plant be installed to prevent future trouble.

JAY A. ORAVEN.

TABLE A.

Sample Number.	Source of Sample.	B. Coli.	Bacteria per C.C.
1	Filter No. 1.....	Present.....	Liquified.
2	Filter No. 2.....	Present.....	Liquified.

TABLE B.

Sample Number.	Source of Sample.	B. Coli.	Bacteria per C.C.
1	Water from Ohio River—Raw.....	Present.....	12,000
2	Filter No. 1 before filtering chemicals added.....	Present.....	5,000
3	Filter No. 1 after filtering.....	Gas formers.....	3,600
4	Filter No. 2 before filtering chemicals added.....	Present.....	4,200
5	Filter No. 2 after filtering.....	Gas formers.....	9,000
6	From cistern—privy vault about 50 feet away at lower level.....	Absent.....	80

TABLE C.

Sample Number.	Source of Sample.	B. Coli.	Bacteria per C.C.
1	Water from Ohio River—Raw.....	Present.....	60,000
2	No. 1 before filtering.....	Present.....	9,000
3	No. 1 after filtering.....	Present.....	250
4	No. 2 before filtering.....	Present.....	6,200
5	No. 2 after filtering.....	Absent.....	400

TABLE D.

Sample Number.	Source of Sample.	B. Coli.	Bacteria per C.C.
1	No. 1 before filtering.....	Present.....	3,500
2	No. 1 after filtering.....	Present.....	300
3	No. 2 before filtering.....	Present.....	3,280
4	No. 2 after filtering.....	Present.....	510
5	Riddell Drug Store.....	Gas formers.....	105
6	Harry Baldry's cistern.....	Gas formers.....	210

TABLE E.

Sample Number.	Source of Sample.	B. Coli.	Bacteria per C.C.
1	No. 1 before filtering.....	Present.....	2,700
2	No. 1 after filtering.....	Present.....	600
3	No. 2 before filtering.....	Present.....	3,700
4	No. 2 after filtering.....	Absent.....	292
5	W. A. Winn's Res. tap.....	Present.....	450
6	Fred Apperman's tap.....	Gas formers.....	45
7	Ed. Klingenhoffer's cistern.....	Absent.....	32

AN INVESTIGATION INTO THE SANITARY CONDITION OF WHITE

of the river. At this point, one-fourth mile below the main sewer outfall, the river is full of ripples, below which the water lies in stagnant pools. A small sewer outfall lies a few hundred feet

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AN INVESTIGATION INTO THE SANITARY CONDITION OF WHITE
RIVER WITH REFERENCE TO THE INFLUENCE OF THE
SEWAGE OF THE CITY OF INDIANAPOLIS ON
THE PURITY OF THE WATER.

Pursuant to an order from the State Board of Health requiring a sanitary survey to be made of White River between the cities of Indianapolis and Martinsville, for the purpose of complying with certain provisions of Section 1 of the so-called Stream Pollution Law, Dr. W. F. King, Assistant Secretary of the State Board of Health, and H. E. Barnard, Chemist to the State Board of Health, on the 13th and 14th of September, 1911, made such survey.

The results of the survey as determined by observation taken at different points on the river are set out as follows:

1. *White River at Broad Ripple.*—At this point the river is nearly free from floating organic matter. The water is but slightly turbid and possesses no odor save the slight musty odor common to flowing streams. The river bottom is free from undecomposed sewage debris and no evidence of decomposition or the evolution of gas was noted.

2. *Bridge at West Washington Street.*—At this point the river is more turbid than at point 1 and some evidence of putrefaction was observed in pools on the river's edge. The odor of the water is not noticeable.

3. *Morris Street Bridge.*—At this point the river is turbid and the evolution of gas in pools and eddies indicates the presence of decomposing material. Much organic matter was observed floating on the surface of the water. This was, in part, grease and animal refuse from the abattoir of Kingan & Co., Ltd., vegetable refuse, tomatoes, etc., from the canning factory of the Van Camp Packing Company. The water has a foul odor, characteristically that of waste waters from packing houses.

4. *One-fourth mile below Indianapolis Abattoir.*—At this point the river has a strong current, but in spite of the rapid flow of water the bottom is covered with a thick, black putrefying sediment varying in depth from one inch to one foot. When detached from the bottom this sediment floats on the surface of the water in masses of varying size. The west bank of the river is lined with canning factory refuse, chiefly decomposing tomatoes. The odor of the water is foul and characteristic of packing house refuse.

5. *Outfall of City Sewer.*—At this point the main sewer of the city of Indianapolis enters the river. The sewage flows in part into an open flume which extends some two hundred feet along the river bank and in part directly into the river. The sewage is a concentrated domestic sewage, carrying fecal matter, waste of infinite variety, vegetable debris, rags, paper, wood, etc. It possesses a typical sewage odor and is apparently entirely undecomposed. The shores are covered with a thick bed of sewage sludge. The river banks are black mould covered with caked sewage deposited during high water.

6. *Belt Railroad Bridge.*—At this point, one-fourth mile below the main sewer outfall, the river is full of ripples, below which the water lies in stagnant pools. A small sewer outfall lies a few hundred feet

above the bridge. The water in the pools, carrying a heavy burden of raw sewage, is in constant movement, due to the ebullition of foul gases produced by the decomposition of precipitated sewage. Every flow of gas is followed by the eructation of masses of black mud. The odor at this point is foetid and nauseating. The river flow is apparently a concentrated sewage.

7. *Raymond Street Bridge.*—At this point the river current is sluggish and the surface of the water is covered with detached masses of putrefying sewage. The odor is that of raw sewage. The shores are covered with vegetable debris, chiefly decomposing tomatoes.

8. *Creek Crossing Raymond Street at Point Below the Stockyards.*—This creek is the outlet of the stockyards and abattoir and is inconceivably foul. The flow of water at Raymond Street is almost stopped by the masses of sewage, dried blood, decomposing animal refuse, etc., which fill the bed of the stream.

9. *Harding Street Bridge.*—At this point the river flows rapidly. The surface of the water is greasy and covered with bubbles formed by gases arising from the putrefying masses of sewage in the bottom of the river. Undecomposed fecal matter was observed in the current. The shores were lined with vegetable debris, chiefly decomposing tomatoes. The odor is very strong.

10. *River at Sellers Farm.*—At this point the city garbage is disposed of by reduction in large iron tanks. The grease is utilized as soap stock and the extracted refuse ground for fertilizer. The waste waters from the reduction plant flow directly to the river. All the night soil and refuse taken from the thousands of vaults in all parts of the city of Indianapolis is hauled to this point and deposited in enormous piles along the river bank. Several acres are covered to a depth of many feet by the night soil which has been dumped thereon since the land was acquired by the city. A levee formed entirely of night soil extends along the edge of the bank some twenty feet above the river. In low ground an area of some one-fourth acre is impounded by a wall of night soil. Into this pool all the barrels hauled out by the vault cleaners is being dumped. The solid matter is slowly filling the pool; the liquid portion filters into the river. During periods of heavy rains there is absolutely nothing to prevent the washings from this entire area flowing directly into the river and carrying with it great quantities of unoxidized fecal matter. The disposal of night soil and refuse from vaults as now attempted at this point constitutes a very serious menace to the purity of White River and the pollution of the river due to this agency is second only to that resulting from the inflow of raw sewage.

The new Harding Street sewer empties into the river just above the levee here described. The river here has the characteristics of a stream of sewage. The odor is very foul and strong. Masses of fecal matter and partially decomposed sewage cover the surface of the river. The water is in a constant state of ebullition. Organic vegetable matter, chiefly decomposing tomatoes, line the bank. Two samples of water were collected at this point, one from the Harding Street sewer, the other from the river below the sewer at the side of the night soil bank. The results of the analysis of these samples accompanies this report.

11. *Covered bridge, known as White River Bridge, five and one-half miles below the City Limits.*—At this point the river is 250 feet wide, flowing with a strong current. The water is dark and turbid, full of putrescible matter, constantly bubbling and apparently a concentrated sewage. The odor is as strong as at the sewer outfalls. The river is wide, tree lined and very attractive, and but for the appearance of the water and the foul odor would be a beautiful stream. Sample 3 was taken at this point.

One mile to the west of the river on the highway the odor was very noticeable and disagreeable. At West Newton road the farmers complained bitterly of the odor of the river, which flows three-fourths of a mile away. At Landersdale, nine miles below the city limits of Indianapolis, and just over the line in Morgan County, residents say the odor of the river is very noticeable one and one-half miles away. Others complain of odor two, three, four and four and one-half miles from the river. W. M. Reese, a resident of Madison Township, Morgan County, complains that the odor is so pronounced that he is compelled to close the windows and doors of his house, and that sometimes in the morning the odor is so nauseating that his family with difficulty eat breakfast.

12. *New Waverly Bridge, eighteen miles by road below Indianapolis, thirty miles or more by river.*—At this point the river is 250 feet wide with a swift current. The water is turbid, full of black, organic debris with a very foul odor and the appearance of dilute sewage. The bottom of the river is covered with black decomposing matter of the same character as that observed at the outfall of the main sewer at Indianapolis. The residents say that no fish are found in the river except at times of flood in the spring. The banks are lined with trees, and aside from the appearance of the water and the foul odor the stream is very beautiful. A mile from the river the odor is so strong that residents are compelled to close windows on summer evenings. When the wind is in that quarter residents at Five Points, four miles from the river, complain of the odor. Carpenters working on the bridge stated that the river on the day of the survey was at least 50 per cent. cleaner than usual. The river is six inches higher than normal.

13. *River at Bungalow, four miles north of Martinsville.*—At this point the river is 200 feet wide, deep and with sluggish current. The surface of the water is fairly clean but occasional black masses are observed. One of us has frequently noted during the present summer that the river here is in much worse condition than at present. The water is turbid and has a slight though decided odor of sewage. Gas was noted rising from eddies at the side of the river.

14. *River at Bridge below Martinsville.*—At this point the river is 200 feet wide, deep and flowing in a strong current. The surface is free from sewage but covered with bubbles which, however, are apparently not due to gas but rather to agitation. No sewage or organic debris save that common to flowing streams was observed on the bottom of the river. The odor was slightly stronger than of normal river water but was not objectionable.

At this point the river, at the stage prevailing on the day of the survey, was suitable for pleasure boating and camping parties could utilize the banks without discomfort.

SUMMARY.

White River, a stream which above Indianapolis has the characteristics of the flowing waters of Indiana, receives the industrial waste and domestic sewage of that city and becomes thereby an open sewer, flowing a liquid possessing all the attributes of sewage. The condition of the water improves but slightly during the first twenty miles of flow, and as far south as Waverly it is still very objectionable to sight and smell. At a time when, because of heavy rains, the river was higher than the normal stage four miles north of Martinsville, it still showed evidence of the sewage poured into it at Indianapolis.

White River below Indianapolis is a foul smelling, putrid stream, unstocked with fish, unfit for use by pleasure boats, and with its banks, otherwise admirably adapted for summer homes, unoccupied by cottages and camps. Land values on either side of the river are depreciated by the odor of decomposing sewage, and residents are compelled to endure a nuisance which should be abated by those responsible for it.

Respectfully submitted,

H. E. BARNARD,
Chemist State Board of Health.

W. F. KING, M. D.,
Assistant Health Commissioner.

WATER ANALYSIS.

(Parts in 100,000.)

Lab. No.	Source of Sample.	Dis. Oxygen.	Oxygen Con.	AMMONIA.		NITROGEN AS		Chlorine.	Hardness.	Iron.
				Free.	Albuminoid.	Nitrates.	Nitrites.			
I	White River empties in canal at Broad Ripple..	.164	.072	.0120	.0160	.0050	.0004	3.8	23.6	.000
II	Washington Street Bridge, Indianapolis.....	.40	.456	.0220	.0320	.0100	.0008	2.4	22.0	.000
III	Main out fall sewer.....	.000	2.60	.7100	.6000	.000	.0000	9.2	33.2	1.200
IV	Harding Street sewer.....	1.33	1.50	.5700	.0500	.000	.0001	4.8	32.0	.10
V	Below Harding Street sewer.....	.000	4.66	.4800	.4200	.000	.0000	6.0	30.8	.30
VI	Covered bridge below city.....	.000	6.07	.2100	.0900	.000	.0000	6.0	26.4	1.00
VII	Waverly bridge below city.....	1.38	.71	.1800	.0200	.000	.0020	5.2	24.8	.08
VIII	Opposite a bungalow.....	.800	.910	.3100	.0250	.000	.0048	12.6	26.0	.02
IX	Bridge below Martinsville.....	.820	1.82	.5250	.0400	.000	.0048	5.4	24.8	.00

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A SANITARY SURVEY
OF THE
OHIO RIVER.

OHIO RIVER REPORT.

INTRODUCTION.

The following report covers in detail the work done by the Indiana State Board of Health during the summer of 1911, in a sanitary survey of that portion of the Ohio River which borders Indiana. The principal object of the survey was to ascertain the suitability of the river as a source of domestic water supply and, in conjunction with this, to determine to what extent Indiana cities and manufacturing concerns are responsible for the pollution of the water.

Similar work had been done in 1909 by the Ohio State Board of Health with the assistance of the Pennsylvania Board of Health. This survey began at the city of East Liverpool, Ohio, and followed the course of the river to the Ohio-Indiana State line below Cincinnati, embracing communities in the States of Ohio, West Virginia and Kentucky.

To avoid any unnecessary interruption a house boat was fitted out with both chemical and bacteriological apparatus, and as the survey progressed it was found that this method of work was entirely practicable and productive of accurate results. With few exceptions, the chemical and bacteriological data which comprise the report are the results of the analyses made by the surveying party during the progress of this floating laboratory down the river. Due acknowledgment is made elsewhere for data obtained from other sources.

Each city and town on either bank of the river was visited and information concerning the water supplies and sewerage system collected. An inspection of all manufacturing establishments was made and the kind and amount of waste determined, if it was found that they reached the river, either directly or through the city sewerage system. Careful study was given the general health conditions at all points, especial attention being given to typhoid fever because of its close relation to domestic water supplies. The data recorded during the course of the survey are as follows:

1. The bacterial content of the water.
2. The presence of *B. coli*.
3. A differential test for *B. coli* on every tenth sample.
4. Estimation of chlorine.

5. Estimation of nitrates.
6. Estimation of nitrites.
7. Estimation of oxygen consumed.
8. Estimation of dissolved oxygen.
9. Estimation of alkalinity.
10. Estimation of turbidity.
11. A sanitary analysis of water from each tributary of the Ohio.
12. A sanitary analysis of the water supply of each city and town visited and including analyses of water not derived from the Ohio River.
13. A thorough survey and description of all water plants utilized by Indiana cities.
14. A thorough survey and description of all sewerage systems utilized by Indiana cities.
15. A determination of the volume and character of manufacturing waste at all points visited.
16. The collection of data on the disposal of garbage and night soil.
17. The collection of data showing typhoid mortality for 1910.

The appendices contain detailed information relative to three States institutions and to cities and towns located on the Ohio River in the States of Ohio, Kentucky and Indiana. The information obtained at the cities embraces data upon population, water supplies, sewerage system, garbage and night soil disposal, manufacturing pollution of the river and typhoid statistics.

ACKNOWLEDGMENT.

Due acknowledgment is here made for the information obtained from the Ohio State Board of Health in the work which it did at Cincinnati and neighboring cities in Kentucky in 1909, the substance of which has been included in this report with revised figures to bring the data up to date.

Through the courtesy of Mr. Bert Baldwin, General Superintendent, and Mr. J. W. Ellms, Superintendent of Filtration of the Cincinnati Water Department, the chemical and bacterial analyses of the river water at the Cincinnati intake was obtained. The data on the chemical and bacterial analyses of the river at 24 points above the river front at Cincinnati extending from the Cincinnati intake to the Fernbank dam is the work of Mr. Ellms and his

assistants at the filter plant in 1910 and 1911, in a study of the possible pollution of the Cincinnati water supply due to the new Fernbank dam.

Mr. E. H. Marks, Sanitary Engineer of the Kentucky State Board of Health, contributed data on a number of Kentucky cities.

at Cairo. These two rivers, that by their junction form the drain an area of about 17,000 square miles.

The watershed of the Ohio River to the mouth of the W River includes greater or less areas in the following States: York, Pennsylvania, Ohio, Indiana, Illinois, Maryland, Vir

North Carolina, West Virginia and Kentucky, a total area of 140,500 square miles. The total drainage area to the Ohio-Indiana line, including the Great Miami River, is 80,947 square miles. The northern boundaries are about 40 miles south of Buffalo, N. Y., the southern boundaries within 300 miles of the Gulf of Mexico, and its eastern boundaries are about 225 miles from the Atlantic Ocean.

The valley of the Ohio River along the southern boundary of Indiana is very narrow except for a few miles near Louisville, and for a similar widening in the southwestern portion of Indiana. There are a few places between Pittsburg and Louisville where it exceeds two miles in width and usually it is scarcely more than one mile wide. In the vicinity of Louisville, it has a width of about four miles, but below the Salt River it abruptly narrows to a width of about one mile and remains so for one hundred miles.

The northern and western portions of the drainage basin are a deforested area; the southern and eastern portions are partially forested, and large areas in the Appalachian Mountains at the sources of some of the southern tributaries are still covered with a heavy growth of trees. As the tributaries are descended the cleared areas increase until the forested area is small.

PRINCIPAL TRIBUTARIES.

The source of the tributaries from the north lies in the glaciated area; the source of the southern tributaries is the steep and rocky slopes of the western side of the Appalachian Mountains.

To the mouth of the Wabash, the principal tributaries beginning at the source, and following down the right or northern bank are the Allegheny, the Beaver River, which enters about twenty-four miles below Pittsburgh; the Muskingum, which enters at Marietta, Ohio, and drains an area equal to about one-fifth of that of the State of Ohio; the Scioto, entering at Portsmouth, Ohio, and draining a large area in the central part of the State; the Little Miami entering a short distance above Cincinnati, Ohio; the Great Miami, at the Ohio-Indiana line and the Wabash, draining the greater part of Indiana and a portion of Illinois, entering at the Indiana-Illinois line.

On the left bank are the Monongahela, the Little Kanawha, entering at Parkersburg, West Virginia, and draining quite an extensive area in western West Virginia; the Great Kanawha, entering the Ohio at Point Pleasant, West Virginia, and draining a large section of West Virginia and smaller portion of Virginia

and North Carolina; the Guyandotte River, entering the Ohio a short distance above Huntington, West Virginia, drains a fairly large territory in the mountainous section of West Virginia; the Big Sandy entering at Catlettsburg, Kentucky; the Licking, entering at Covington, Kentucky, opposite Cincinnati; the Kentucky River, entering at Carrollton, Kentucky, drains a considerable portion of central Kentucky, and the Green River, entering about nine miles above Evansville, drains a large part of the western part of Kentucky.

Two rivers, the Tennessee and Cumberland, empty into the Ohio River below the mouth of the Wabash. Table 1 gives the principal tributaries with the number of square miles drained by each.

TABLE 1.
Drainage Basin of the Ohio River.

RIVER.	Population in 1910.	Area in Square Miles.	Population per Square Mile.
Monongahela.....	820,875	7,255	113
Allegheny.....	1,001,724	9,660	100
Muskingum.....	611,041	7,642	81
Kanawha.....	560,382	13,374	42
Big Sandy.....	204,084	4,233	48
Scioto.....	551,002	6,066	91
Licking.....	234,696	3,400	69
Miami.....	658,889	5,489	120
Kentucky.....	342,163	6,736	51
Green.....	457,112	9,236	49
Wabash.....	2,301,133	32,913	70
Cumberland.....	843,745	17,482	48
Tennessee.....	1,792,099	40,696	44
Ohio (direct).....	4,025,938	37,356	107
Ohio (total).....	14,399,883	201,437	72

GRADIENT.

The topography of the watershed of the Ohio River varies from flat and rolling in the western and northern portion to rough and mountainous in the southern and eastern sections. In general, the rock floor of the valley is 30 to 50 feet below the level of the stream. It rarely reaches a lower level than 75 feet below the stream. It is believed that no place occurs in the whole length of the valley where a rock barrier crosses its entire width at a level as high as the bed of the present stream. In several places rock shelves extend out part way across the river bed, leaving a channel deep enough for the passage of boats along the opposite bank.

At Louisville it is found by well and bridge soundings that a channel 25 feet deep or more lower than the present surface at the head of the rapids, leads southwestward from near the south end

of the Jeffersonville bridge a short distance and then turns westward, passing through the center of the city.

On the borders of Indiana there are fifty-five riffles besides the Falls at Louisville. They have a total fall of 80.28 feet in a combined distance of 134.5 miles. At the Louisville Rapids there is a fall of 23.09 feet in 2.25 miles. Notwithstanding these riffles, the Ohio is generally navigable throughout the entire season for boats drawing less than three feet of water. It is navigable for vessels drawing six feet of water during a few months of the early part of the season, but there is usually little traffic with such boats after the month of July. The canal at Louisville affords opportunity for passing around the rapids at low water, but during high water the boats are able to pass over the rapids.

Above the Fernbank dam, the point at which this work was started, the river has a length of 481 miles and from the dam to the mouth of the Wabash, a length of 357 miles.

The average fall of the river from Pittsburgh to Cincinnati is .50 feet per mile. The total fall between Cincinnati and the mouth of the Wabash River as shown in the accompanying table is 118.03 feet, or an average of .32 feet per mile. The maximum fall is between Evansville and Mt. Vernon and is .51 feet per mile; and the minimum, .004 feet per mile, between Mt. Vernon and the mouth of the Wabash.

In a distance of forty-six miles between Madison and Louisville there is a total fall of but .62 of a foot, an average of .014 feet per mile. In the low water periods, when nearing Louisville the flow of the stream is scarcely perceptible.

TABLE 2.
Water Elevations Along the Ohio River.

Point.	Distances in Miles Between Points.	Elevations, Zero of Gauge+Low Water.	Average Slope per Mile Between Points. In Feet.
Cincinnati.....	74	430.060+1.9=431.960	.330
Kentucky River.....	12	406.318	.250
Madison.....	46	403.153+2.2=405.353	.014
Louisville, Upper Gauge.....		403.031+1.7=404.731	
Louisville, Lower Gauge.....		376.121+1.6=377.121	.250
Evansville.....	183	332.300	.510
Mt. Vernon.....	36	314.000	.004
Wabash River.....	30	313.926	

THE RIVER STAGE.

The river stage affects materially the results of this survey, especially with reference to the chemical and bacterial analyses and the possible pollution of the water at any point. The most favorable time for a nuisance to be developed is at extreme low water. Table 3 shows the number and depth of freshets or floods in feet for a period of fifteen years, as represented by gauge readings obtained at Louisville, Kentucky, at the Government Weather Bureau Office.

TABLE 3.

Number and Depth of Freshets or Floods, in Feet, 1896 to 1910. Government Gauge Readings at Louisville.

Depth in Feet.	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	Total.
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	4	0	3	25	0	0	0	43	0	0	0	10	1	0	86
3	0	20	0	15	44	34	49	48	71	14	7	1	92	34	7	446
4	18	56	26	64	31	32	34	63	54	40	64	19	55	58	12	626
5	33	38	50	69	50	29	45	32	27	63	82	52	38	47	3	658
6	62	52	37	36	64	53	45	52	24	78	48	40	13	27	8	639
7	75	47	46	31	28	45	38	30	28	60	42	46	14	27	25	582
8	54	33	45	24	36	49	39	29	40	46	30	59	13	47	90	634
9	48	23	46	30	22	29	22	13	23	22	27	47	25	35	82	494
10	16	19	37	13	31	26	31	17	14	7	33	39	22	31	58	394
11	19	13	25	18	18	25	11	15	10	5	14	9	16	16	28	242
12	16	13	10	7	15	16	7	9	3	5	3	2	6	11	8	131
13	7	7	5	7	7	12	4	7	3	4	3	4	5	2	6	83
14	8	2	3	4	2	0	9	5	5	3	1	3	4	4	2	56
15	3	4	1	8	0	0	5	3	2	3	0	1	4	2	1	46
16	1	2	1	8	0	1	2	3	3	1	0	6	0	2	3	34
17	1	3	2	7	0	1	3	3	2	0	0	0	2	2	1	30
18	0	3	0	1	0	0	4	2	2	3	0	3	5	2	2	26
19	0	6	2	2	0	0	2	3	5	4	1	1	5	2	3	39
20	2	1	3	1	0	0	0	4	2	2	1	0	5	3	6	24
21	2	1	1	1	0	0	3	1	2	2	0	2	2	3	2	30
22	2	1	2	4	0	1	2	2	1	3	0	3	5	1	2	20
23	1	3	0	0	0	1	2	4	1	1	1	1	1	2	4	21
24	0	1	0	1	0	0	7	4	0	0	2	1	1	0	4	17
25	0	2	2	2	0	0	1	4	0	0	0	1	1	0	0	21
26	0	0	1	1	0	0	0	4	0	0	3	0	2	1	0	13
27	0	3	4	3	0	2	0	6	0	0	0	0	2	0	3	23
28	0	1	0	0	0	0	0	0	0	0	0	0	2	1	0	5
29	0	1	4	0	0	0	0	0	0	0	0	3	1	1	0	11
30	0	0	3	2	0	2	0	0	0	0	0	0	2	1	0	9
31	0	1	2	0	0	1	0	0	0	0	0	0	1	0	0	8
32	0	1	2	2	0	1	0	0	0	0	0	0	0	2	0	6
33	0	0	0	1	0	3	0	0	0	0	0	4	0	2	0	12
34	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2
35	0	3	1	0	0	0	0	0	0	0	0	1	0	0	0	8
36	0	0	3	0	0	0	0	0	0	0	0	5	0	0	0	8
37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
41	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2

The tables show that a four- to eight-foot stage has been most frequent during that period, the figures dropping rapidly on either side of those stages. A one-foot stage has never been recorded during that period. A two-foot stage has been reached eighty-six times, this represents six of the fifteen years. The year 1904 was

an extremely dry one, the two-foot stage was recorded forty-three days of the year, or one-half as many times as during the last fifteen years. In 1900 this stage was reached twenty-five times.

Because of the important relation of the river stages to the results obtained on the trip, the daily stage of the river covering the time spent on the survey is given in Table 4. At Cincinnati the figures given are consistent, and follow the actual stage of the river up to July 31st. At this time the wickets in the Fernbank dam were raised and the stages recorded for the following months are for a pool stage.

TABLE 4.

The Daily River Stage in Feet at Cincinnati, O., and Evansville, Ind., Covering the Period of the Survey.

DAY.	RIVER STAGE IN FEET.							
	July.		August.		September.		October.	
	Cincinnati.	Evansville.	Cincinnati.	Evansville.	Cincinnati.	Evansville.	Cincinnati.	Evansville.
1.....	7.6	8.4	11.6	2.9	11.8	3.7	11.5	11.6
2.....	7.4	8.3	11.4	3.2	13.0	3.4	11.2	10.5
3.....	7.7	7.5	11.7	3.4	17.9	3.1	15.0	10.1
4.....	8.4	6.6	11.2	3.4	21.0	3.0	17.4	11.0
5.....	8.9	6.0	10.6	3.4	22.0	4.6	22.2	12.4
6.....	8.7	5.5	10.3	3.1	21.8	9.3	27.6	12.7
7.....	8.2	5.3	10.0	2.8	19.7	12.3	30.2	13.2
8.....	7.9	5.4	9.7	2.7	16.8	14.6	29.8	15.5
9.....	7.6	5.9	9.5	2.7	14.3	15.0	28.7	18.7
10.....	6.7	5.9	9.4	2.8	12.3	14.4	28.2	20.7
11.....	6.4	6.0	9.3	2.7	13.5	13.3	28.8	21.5
12.....	7.2	6.0	9.0	2.3	12.1	12.0	28.8	21.5
13.....	6.7	5.7	7.2	2.4	14.7	10.7	28.9	22.2
14.....	7.1	5.4	10.0	2.5	17.5	9.8	28.3	21.1
15.....	7.1	5.4	12.2	2.4	19.5	10.0	26.7	21.2
16.....	6.5	5.4	11.9	2.4	21.4	10.6	24.2	21.2
17.....	6.4	5.3	11.9	2.4	20.6	11.8	21.9	20.9
18.....	6.2	5.2	12.0	2.5	20.0	13.8	22.2	20.1
19.....	6.0	5.2	11.2	2.4	24.8	15.4	22.9	19.3
20.....	5.7	5.0	11.9	2.3	30.4	16.7	27.7	18.7
21.....	5.7	4.8	12.0	2.3	32.7	15.8	32.8	18.3
22.....	5.3	4.5	12.0	2.4	32.2	18.1	34.0	18.6
23.....	5.0	4.4	11.9	2.5	29.4	20.9	34.5	20.8
24.....	4.8	4.2	11.8	2.5	25.7	22.6	32.5	23.4
25.....	4.6	4.2	11.8	2.7	21.9	22.7	29.4	24.9
26.....	4.8	4.0	11.8	2.8	18.4	22.3	25.9	25.0
27.....	5.0	3.8	11.8	2.9	15.7	19.2	22.4	24.0
28.....	5.9	3.5	11.0	3.0	14.1	16.9	19.7	22.3
29.....	6.8	3.2	10.7	3.5	13.4	14.9	17.4	20.3
30.....	8.2	3.1	11.7	3.9	12.4	13.0	15.6	18.0
31.....	9.5*	2.9	11.5	3.9	.....	.....	14.1	15.8

*Pool stage at Cincinnati after July 31, Fernbank dam closed.

The stage recorded at Evansville represents the actual stage of the river, unaffected by a dam, and this stage is recorded in all tables, and is used in showing the river stage on the charts where the chemical and bacterial data is depicted graphically.

During the last week in July, all of August and a few days in September, the river was so low that all large boat traffic was stopped, as only boats of very shallow draft could get over the bars.

After the first week in September all traffic was resumed and there was plenty of water for the large coal fleets, many of which passed down the river during this month.

PRECIPITATION.

The mean annual rainfall is about 45 inches, ranging from 35 inches along the northern boundary of the basin to 70 inches in the southeastern part at the source of the Tennessee River.

Table 5 shows the average monthly precipitation for 1911. These figures are averages obtained from the monthly climatological report issued by the United States Department of Agriculture. While they do not show the amounts upon each of the tributary watersheds, some idea can be drawn from the general average over the total basin.

The year, as a whole, was an unusual one, being exceptionally dry during the early summer months, although the last month of the survey the rainfall was above normal.

TABLE No. 5.

PRECIPITATION BY MONTHS OVER OHIO RIVER DRAINAGE BASIN IN 1911

<i>Month.</i>	<i>Rainfall in Inches</i>
January	4.03
February	2.65
March	2.91
April	6.02
May	1.84
June	3.89
July	2.81
August	4.99
September	4.88
October	4.47
November	3.44
December	4.93
Total	46.86

In January the average precipitation over the watershed was 4.03 inches. This is above normal, and it varied from one inch near the mouth of the Ohio River to more than eight inches in eastern West Virginia.

The precipitation was unusually frequent during February, but the total amount was below normal. It varied from two inches

in the more northerly sections to five inches and over in the extreme southern sections. The average for the month was 2.65 inches.

During March the total amount of precipitation was mostly below normal. The average for the whole watershed for the month was 2.91 inches. It ranged from four and six inches in the upper watershed of the Youghiogheny and Cheat River, the southern portion of West Virginia, and over the upper watersheds of the Cumberland and Tennessee rivers and between one to three inches over the rest of the district.

There was a large excess of precipitation in April. Two and one-half to four inches fell over the upper watersheds of the Allegheny River in Pennsylvania and New York and from three to four inches over the upper drainage area of the Muskingum and Great Miami rivers in Ohio, and from ten to fifteen inches in the Tennessee River basin and upper watersheds of the Cumberland River in Kentucky. Six inches or more fell over the southern portion of Illinois and Indiana, the greater portion of Kentucky, practically all of Tennessee, and over the area of the district lying south of that State. From four to six inches fell over the remainder of Illinois, Indiana and Kentucky, over nearly all of Ohio, West Virginia, southwestern Virginia and western Pennsylvania, and from two and one-half to four inches over the small remainder of the district. The average over the whole watershed was 6.02 inches.

In May the average precipitation over the whole watershed was 1.84 inches. This was below normal. Three to five inches fell over limited areas in southeastern Indiana, west central Tennessee and southern Kentucky, and less than three inches over practically the rest of the district.

The precipitation during the month of June was very unequally distributed over the district, ranging from .8 inches to 9.3 inches. The average for the month was 3.89 inches. Over four inches fell in the following sections: southwestern New York and western Pennsylvania, most of West Virginia, south and eastern counties in Ohio, western Maryland, the eastern and some of the central and western counties in Kentucky, northeastern Indiana, and at a few points in the central Wabash section of Illinois. Over the rest of the district it was less than four inches and in some parts less than three inches.

In July the precipitation came mostly as local showers, but there were a few days of general rain. Over large areas in central,

northern and eastern portion of the district the total rainfall was two inches and under, and in many localities less than one inch. The average for the month was 2.81 inches, varying between .2 inch at Chillicothe, Ohio, and 8.88 inches at Diamond, Georgia.

The monthly precipitation for August was much above normal over the northwestern quarter of the district and below normal in Indiana and Illinois except in the extreme southern portion of those States, over extreme eastern Kentucky and eastern Tennessee. Over practically all of the Ohio River drainage area above the Big Sandy on the south and the Scioto on the north the rainfall of the month totaled between five and twelve inches. Over the Cheat and Monongahela basins of West Virginia and southwestern Pennsylvania where the rainfall was greatest, there was between eight and twelve inches. Six to eight inches fell at several points on the Great Kanawha Basin. The lightest rainfall in the district was in the Wabash basin in Illinois and Indiana, and over all the section less than three inches, over much of it less than two inches, and at a few points less than one inch fell. The monthly average was 4.99 inches.

The general and heavy rains were not destructive, however, but in the main were productive of great good, because after the long drought they thoroughly soaked the soil and replenished the much depleted water supply in the rivers and streams. They not only broke the prolonged drought but gave good boating stages in the navigable rivers and high water in most of the smaller streams.

Unusually heavy rains for this season of the year fell during September over all the northern and a considerable portion of the central section of the district. The average for the month was 4.88 inches. This was above normal at all stations in Illinois, Indiana, Ohio, western Pennsylvania and western Maryland, at most points in West Virginia, and at a majority of points in Kentucky. The heaviest rainfall occurred over the Wabash watershed in Illinois and Indiana and eastward over southern Indiana into the lower watershed of the Miami rivers in southwestern Ohio. At many stations in this extensive area the monthly rainfall ranged between seven and fifteen inches, or from two to fifteen inches above the usual normal amount for September. There was also an excessive amount of rainfall over the watershed of the upper Ohio River and head-water tributaries. From five to ten inches fell in western Pennsylvania and extreme eastern Ohio and northwestern West Virginia.

The average rainfall for October was 4.47 inches. It was un-

usually large in amount and frequent in occurrence in nearly all parts of the Ohio Valley. Over considerable of the district, particularly the eastern half and in southeastern Indiana, it averaged nearly double the normal amount for the month, while at many points in this area considerable more than double the usual amount was received, and at other points the amounts were the largest of any October on record. The greatest monthly precipitation, ranging from five to nine inches, occurred over large areas extending from southeastern Indiana southeastward over eastern Kentucky, southern West Virginia and into southwestern Virginia and over other smaller portions of the watershed.

The heavy rains at the beginning of the month, following so closely the unusually large rainfall in September, caused damaging floods in some of the upper tributaries, also in the rivers and small streams in portions of Illinois, Indiana, and in eastern Kentucky.

The precipitation in November was slightly below normal over most of the northeastern portion of the district and over Illinois. It was above normal over the remainder of the district, although at only a few scattered places did the excess amount to as much as one inch. The amounts at the various stations ranged between two to four inches, except that amounts ranging from four to six inches were recorded at most stations in southern Indiana. Precipitation was unusually well distributed through the north.

In some sections, notably western Pennsylvania, western New York, West Virginia and Kentucky, precipitation occurred nearly every day, yet in the main precipitation occurred in five well defined periods. The average for the month was 3.44 inches.

In December the precipitation was below normal over the Wabash basin of Illinois and Indiana, about normal over Ohio, western Pennsylvania, West Virginia, southwestern Virginia and western North Carolina, but considerably above normal over the rest of the district. From south central Kentucky southward over Tennessee and northern Alabama, where the monthly amounts ranged between seven and sixteen inches, the precipitation was not only the greatest for any December of record, but the amount ranks among the greatest that ever occurred in these sections during any previous months. The monthly average over the whole watershed was 4.93 inches.

POPULATION ON WATERSHEDS.

The total population on the watershed of the Ohio River to the mouth of the Wabash is 11,750,000. The distribution of the population on the watersheds of the different tributaries is given in

Table 1, which was obtained from the Department of Commerce and Labor, Bureau of the Census. The population per square mile is also shown. The maximum population is found in the Miami watershed with 120, and the minimum on the Kanawha watershed with 42 per square mile. The population directly on the Ohio River to the mouth of the Wabash is nearly 4,000,000.

The concentrated points of population on this survey were found to be at Cincinnati and the neighboring cities in Kentucky, with about half a million of people; Louisville, Kentucky; Jeffersonville and New Albany, Indiana, with 230,000 people, and Evansville with 70,000 people. The total population of all cities and towns on the Ohio River in Indiana is about 140,000, nearly half of which is in Evansville.

TYPHOID FEVER.

Especial attention was given to the collection of typhoid statistics, because of the close relation of the water supply to typhoid fever. That this relation exists is shown most strikingly by the information collected.

TABLE 6.

Typhoid Fever Statistics for 1910 Ohio River Cities and Towns.

CITY OR TOWN.	Population.	Deaths.	Deaths per 100,000.	Source of Water Supply.
Cincinnati, Ohio.....	363,591	21	5.7	River—filtered.
Covington, Ky.....	53,270	7	13.2	River—reservoir.
Lawrenceburg, Ind.....	4,200	0	0	Wells.
Aurora, Ind.....	5,200	2	38.5	River—filtered.
Rising Sun, Ind.....	1,400	0	0	River—reservoir.
Vevay, Ind.....	1,280	2	158.8	River—reservoir.
Carrollton, Ky.....	2,500	2	80.0	River—reservoir.
Madison, Ind.....	7,900	3	38.0	River—reservoir.
Jeffersonville, Ind.....	12,000	6	50.0	River—direct.
Louisville, Ky.*.....	268,000	73	27.2	River—filtered.
New Albany, Ind.....	23,000	3	13.0	River—reservoir.
Cannelton, Ind.....	2,000	0	0	River—reservoir.
Tell City, Ind.....	4,000	3	75.0	Wells.
Rockport, Ind.....	2,700	1	37.0	Wells.
Evansville, Ind.....	67,800	20	29.5	River—direct.
Henderson, Ky.....	13,000	5	38.5	River—reservoir.
Mt. Vernon, Ind.....	6,100	2	32.8	River—reservoir.

*Estimated population.

Table six gives the population of cities, the number of typhoid deaths and the rate per 100,000 for 1910, together with the source of the drinking supply in each case. While typhoid fever cannot always be attributed to the drinking water, yet a close connection can be seen. In 1910, Cincinnati, with its filtered water, had a death rate of 5.7, while Covington, obtaining its supply but a short distance from where the Cincinnati intake is located, had a death

rate of 13.2, more than double the Cincinnati rate. The Covington supply is not filtered, but sedimentation is favored by several days storage capacity.

Two towns in Indiana, Lawrenceburg and Aurora, have populations about equal in number. The former, using deep wells, had no deaths from typhoid in 1910, while the latter, using a filtered supply from the Ohio River, had two deaths, a rate of 38.5 per 100,000.

With but two exceptions, eleven other cities using river water have a fairly high death rate. Of these eleven, seven pumping to reservoirs and having different storage periods, only three have a rate lower than 32. One of these three, Cannelton, has a supply the condition of which is so bad that it is not generally used for drinking purposes. This may probably account for no deaths in 1910 at that place. The other two, Rising Sun and New Albany, have a low rate, 0 and 13.0 respectively. Of the remaining four of the eleven, two, Jeffersonville and Evansville, had a direct pressure system, pumping the water directly from the river to the consumer. Louisville and Mt. Vernon filtered the water before distribution. Jeffersonville had a death rate of 50.0, Evansville of 29.5, Louisville of 27.2, and Mt. Vernon 32.8.

Two cities, Tell City and Rockport, both use deep wells, and the analyses made during the survey showed the water to be in excellent condition, yet the death rate of the former was 75.0, and of the latter 37.0. This seems to contradict the other figures quoted, but as the deaths were but three at Tell City and one at Rockport, they have little bearing.

Table 7, showing the effect upon typhoid fever of introducing filtration at two of the large cities, Cincinnati and Louisville, substantiates the claims that to a large extent the river water is responsible for the great amount of typhoid along the river.

TABLE 7.
Typhoid Death Rates at Cincinnati and Louisville Before and After Introducing Filtration.

Crrr.	Rate Per 100,000.	Remarks.
Cincinnati.....	64.0	Average for three years, 1904, 1905, and 1906, before using filtered water.
Cincinnati.....	12.6	Average for three years, 1908, 1909 and 1910, after using filtered water.
Louisville*.....	53.6	Average for two years, 1907 and 1908, before using filtered water.
Louisville*.....	35.8	Rate for 1909, filter plant in operation one-half year.
Louisville*.....	24.2	Average for two years 1910 and 1911, after using filtered water.

*Estimated population.

The average death rate at Cincinnati for the three years, 1904, 1905 and 1906, before the filtered water was in use was 64.0 per 100,000. After the introduction of filtered water into the mains the average rate for the following three years, 1908, 1909 and 1910, was reduced to 12.6 per 100,000. In addition, there was a reduction of more than 50 per cent. in all other intestinal diseases. In 1910 in Cincinnati the rate was 5.7 per 100,000, and in 1911 it was 11.4, just double the previous year, but still a very low figure. Extreme care has been taken by the Health Department in tracing the cases, and in most instances the patients have been out of the city or have spent some time camping or fishing along the river just before being taken sick, showing beyond question that the water supply could be held responsible for very few of the cases.

In Louisville, the use of the filtered water had a similar effect upon the typhoid mortality. The average rate for two years, 1907 and 1908, while the unfiltered water was being used, was 53.6 per 100,000. The following year, 1909, the filter plant was in operation for about six months of the year. The rate for this year was 35.8. For the following two years the average rate was 24.2. There are between 500 and 600 wells in use in the city, and an analysis of many of them shows contamination. As fast as these wells are examined and found to be polluted, they are abandoned, the water company installing free hydrants to replace them. A good many of the poorer people depend on the wells, and the hydrants are for their benefit. It is hoped that when all the wells are abandoned there will be a still greater reduction in the typhoid fever death rate. In order that the typhoid death rates at Louisville in the tables used in this report may agree with those used by the Louisville Health Department, they are based on the estimated population and not on the United States Census for 1910.

TABLE 8.
Typhoid Fever Statistics in Indiana Cities and Towns Along the Ohio River.

CITY OR TOWN.	YEAR.											
	1907.			1908.			1909.			1910.		
	Popu- lation.	Deaths.	Death Rate per 100,000.	Popu- lation.	Deaths.	Death Rate per 100,000.	Popu- lation.	Deaths.	Death Rate per 100,000.	Popu- lation.	Deaths.	Death Rate per 100,000.
Lawrenceburg.....	4,300	1	22.2	4,200	0	0	4,200	0	0	4,200	0	0
Aurora.....	3,900	4	102.8	5,200	0	0	5,200	0	0	4,400	0	0
Rising Sun.....	1,500	0	0	1,400	2	143.0	1,400	1	71.5	1,513	1	66.0
Vevay.....	1,500	0	0	1,200	1	83.3	1,200	1	83.3	1,266	2	159.0
Madison.....	8,900	6	67.5	7,900	4	50.7	7,900	3	38.0	6,934	5	72.1
Jeffersonville.....	10,800	11	102.0	12,000	9	75.0	12,000	6	50.0	10,410	2	19.2
New Albany.....	20,600	23	111.8	23,000	6	26.1	23,000	11	47.8	20,639	7	33.9
Cannelton.....	2,300	2	87.0	2,000	0	0	2,000	0	0	2,130	1	47.0
Tell City.....	2,900	3	103.4	4,000	3	75.0	2,700	0	0	3,369	3	89.0
Rockport.....	.....	.....	.....	.....	.....	.....	2,700	0	0	2,700	0	0
Newark.....	64,000	28	43.8	64,000	20	31.3	64,000	28	39.1	67,800	20	29.5
Evansville.....	.....	3	56.6	6,000	2	33.3	6,000	4	66.6	6,100	2	32.8
Mt. Vernon.....	5,300	.....	.....	.....	.....	.....	.....	.....	.....	5,563	1	18.0

*Deep wells used at Jeffersonville in 1911.

Table 8 gives the population, the number of deaths and the death rates for the last five years of all Indiana river cities where this information was available. The figures, as a general rule, bear out the foregoing statements. In the case of one city this is very marked. On January 1, 1911, the Jeffersonville source of supply was changed from the river to deep wells. The lowest death rate in the four previous years was 50, and in 1911, after the change, this was reduced to 19.2.

The use of the Ohio River water in most of the cities should not be attempted unless it is purified by a filtering plant, and in addition a chemical treatment should be provided when needed at periods of extremely bad water.

WATER SUPPLIES.

The determination of the suitability of Ohio River water as a source of domestic supply was one of the important objects of the survey. To this end, data at all points was collected, as shown in the Tables 9 and 10. Table 9 gives the cities using the river water, and Table 10, the cities using ground water supplies.

TABLE 9.

Water Supply Data for Cities on Ohio River, Cincinnati, Ohio, to Mt. Vernon, Indiana. Ohio River Water.

Distance in Miles From Pittsburgh.	CITY OR TOWN.	Estimated Population.	Estimated Population Using Water.	Average Daily Consumption in Gallons.	Reservoirs.		Remarks.
					Capacity.	Storage in Days.	
462.0	Dayton, Ky.....	6,979	6,979	110,000			From Newport reservoir.
466.0	Bellevue, Ky.....	6,683	6,000	110,000			From Newport reservoir.
466.5	Newport, Ky.....	30,700	30,000	2,000,000	50,000,000	22.6	Reservoir.
466.5	Covington, Ky.....	53,270	50,000	3,267,000	111,000,000	34.0	Reservoir.
466.5	Cincinnati, Ohio.....	363,591	350,000	46,480,460	330,000,000	7.1	Mechanical filter.
495.0	Aurora, Ind.....	4,400	2,200	300,000	100,000	3	Mechanical filter.
533.0	Vevay, Ind.....	1,256	800	200,000	1,500,000	7.5	Reservoir.
541.0	Carrollton, Ky.....	2,500	700	200,000	250,000	1.3	Reservoir.
533.0	Madison, Ind.....	6,934	4,000	1,000,000	720,000	.7	Reservoir.
598.0	Louisville, Ky.....	221,000	160,000	22,131,000	65,000,000	3.0	Mechanical filter.
603.0	New Albany, Ind.....	20,629	15,000	1,500,000	24,000,000	16.0	Reservoir.
717.0	Cannelton, Ind.....	2,130	300	160,000	560,000	3.5	Reservoir.
749.0	Owensboro, Ky.....	17,000	3,000	350,000			Infiltration. Direct pressure.
769.0	Newburg, Ind.....	1,200	300	12,500	10,000	.8	Reservoir.
783.0	Evansville, Ind.....	69,647	40,000	9,000,000			Direct pressure.
794.5	Henderson, Ky.....	13,000	12,000	2,000,000	3,500,000	1.4	Reservoir.
819.5	Mt. Vernon, Ind.....	5,563	4,000	700,000	196,000	.3	Mechanical filter.

TABLE 10.

Water Supply Data for Cities on the Ohio River, Cincinnati, Ohio, to Mt. Vernon, Indiana. Ground Water Supplies.

Distance in Miles from Pittsburgh.	CITY OR TOWN.	Estimated Population.	Estimated Population Using Water.	Average Daily Consumption in Gallons.	Reservoirs.		Remarks.
					Capacity.	Storage in Days.	
597.5	Jeffersonville, Ind.	10,410	6,000	1,000,000	352,000	.4	Deep wells.
658.0	Leavenworth, Ind.	710	300	25,000	286,000	11.4	Spring.
720.0	Tell City, Ind.	3,369	1,500	190,000	110,000	.6	Deep wells.
740.7	Rockport, Ind.	2,700	1,700	280,000	60,000	.2	Deep wells.
749.0	Owensboro, Ky.	17,000	13,000	1,500,000	2,000,000	1.3	Deep wells.

Eight cities in Indiana use the Ohio River as a water supply. Five of the eight pump to reservoirs, the water from this point being supplied to the consumers by gravity. Two cities have mechanical filters. They produce an effluent which is satisfactory nearly all of the year, but it was found that at certain periods the bacteria present were numerous, and that *B. coli* were not eliminated at all times.

At Evansville a direct pressure system was used. A filter plant has been built which will be in operation about the first of the year 1912, after which the city will be supplied with a good quality of drinking water, as a thorough treatment of the water is planned. This includes a hypochlorite of lime plant for a bacterial treatment in addition to purification by filtration.

The analyses and the discussion under "Typhoid Fever" shows the practice of the five cities using the water direct from reservoirs without any treatment to be dangerous and one which should be remedied. Ohio River water is not suitable for drinking without a thorough treatment.

Table 10 shows that four cities or towns in Indiana located on the Ohio River depend on ground water supplies, three of them using deep wells and one a spring. The three using the deep wells have a water of a very satisfactory quality.

SEWERAGE SYSTEMS.

Between Cincinnati and the mouth of the Wabash River, a population of 841,600 lives in cities having sewerage systems. An estimate of the number of people connected to the sewers is about 530,500.

Cincinnati and its neighboring cities represent about 465,000, or more than 55 per cent. of the total population, with about 302,-

000, or about 57 per cent. of the total population connected to the sewers. Louisville, with 221,000 people, has about 26 per cent. of the total population, with 165,000, or 31 per cent., of the total population connected to sewers. The total population in Indiana is about 140,000, and this includes all cities and towns, whether sewered or not. By comparison with the figures at Cincinnati and Louisville, we can see that the whole problem of pollution of the river by domestic sewage from Indiana cities is insignificant as compared to that represented by either of these two places.

TABLE 11.

Sewerage Data for Cities and Towns on the Ohio River, Cincinnati, Ohio, to Mt. Vernon, Indiana.

Distance in Miles from Pittsburgh.	CITY OR TOWN.	Estimated Population.	Estimated Population Connected to Sewers.	Miles of Sewers.		No. Outlets into Ohio River.		No. Outlets into Local Streams.	
				Sani- tary or Com- bined.	Storm.	Sani- tary or Com- bined.	Storm.	Sani- tary or Com- bined.	Storm.
462.0	Dayton, Ky.....	6,979	1,250	6.0	.....	3	.....	.....	.....
466.5	Bellevue, Ky.....	6,683	2,500	7.0	.....	7	.....	.....	.....
466.5	Newport, Ky.....	30,300	30,300	34.0	.....	8	.....	3	.....
466.5	Covington, Ky.....	53,270	41,000	57.0	.....	20	.....	10	.....
466.5	Cincinnati, Ohio.....	363,591	225,000	274.5	75.8	38	.....	32	.....
470.0	Ludlow, Ky.....	4,000	2,000	1.0	.....	5	.....	2	.....
495.0	Aurora, Ind.....	4,400	500	1.0	.....	1	.....	.....	.....
553.0	Madison, Ind.....	6,934	700	3.3	.....	11	.....	.....	.....
597.5	Jeffersonville, Ind.....	10,410	400	4.8	.....	8	.....	.....	.....
598.0	Louisville, Ky.....	221,000	165,000	180.2	8.7	15	.....	1	18
603.0	New Albany, Ind.....	20,629	5,000	17.0	8.0	.....	.....	1	4
717.0	Cannelton, Ind.....	2,130	100	.8	.....	1	.....	.....	.....
720.0	Tell City, Ind.....	3,369	1,600	2.9	.....	7	.....	.....	.....
740.7	Rockport, Ind.....	2,700	50	.4	.6	1	.....	.....	.....
749.0	Owensboro, Ky.....	17,000	5,600	20.0	.....	8	.....	.....	.....
783.0	Evansville, Ind.....	69,647	42,000	47.7	.....	8	.....	6	.....
794.5	Henderson, Ky.....	13,000	4,500	9.6	.....	8	.....	3	.....
819.5	Mt. Vernon, Ind.....	5,563	3,000	9.0	.....	3	.....	4	.....

Table 11 shows the different cities with sewage systems, the population of each city, an estimated percentage of the population connected to the sewers, the number of miles of sanitary or combined sewers and the number of miles of storm sewers, the number of outlets of each into the Ohio River and into local streams. There are about 676 miles of sanitary or combined sewers, Cincinnati and vicinity having 380 miles, or more than half of the total mileage, and Louisville 180 miles, or about one-fourth of the total, and Indiana has about 87 miles. All cities in Indiana located directly on the Ohio River have therefore but one-eighth of the total mileage of sanitary or combined sewers and but one-seventh as much as is located at two points on the survey, namely, Cincinnati and Louisville. Cincinnati alone has nearly three times the sewer mileage

of all Indiana cities and Louisville nearly one-half as much again. Evidently the problem of stream pollution by the domestic sewage of Indiana river cities is not as great a one as is represented by either of these two cities alone. Evansville presents the first case where a nuisance is likely to occur in Indiana, but since it is located far below Louisville, and the condition of the river water has materially improved during the flow of 185 miles, the addition of sewage and manufactural waste will not soon cause any serious trouble.

MANUFACTURING WASTES.

In each city inspected, all manufacturing concerns were visited as shown in Table 12 and information as to any possible pollution both as to type and amount of the river obtained.

TABLE 12.
Manufacturing Concerns in Indiana Discharging Wastes into the Ohio River.

CITY OR TOWN.	Name of Company.	Number of Employees.	Product.	Source of Water Supply.	Waste.		Remarks.
					Kind.	Amount, Gallons per Day.	
Lawrenceburg.....	Reeddale Distillery Co.....	80	Whiskey.....	Well.....	Distillery slop.....	.....	Feed 700 cattle.
Lawrenceburg.....	Greendale Distillery Co.....	40	Whiskey.....	Well.....	Distillery slop.....	.....	Feed 450 cattle.
Lawrenceburg.....	Squire's Distillery Co.....	20	Whiskey.....	Well.....	Distillery slop.....	.....	Feed 500 cattle.
Rising Sun.....	Rising Sun Canning Co.....	50	Tomatoes.....	Well.....	Peelings and wash water.....	500	
Markland.....	Markland Canning Co.....	40	Tomatoes.....	Well.....	Peelings and wash water.....	325	
Madison.....	Markland Canning Co.....	125	Catsup.....	Well and city water.....	Peelings and seeds.....	650	
Madison.....	Markland Canning Co.....	300	Shedding, yarn, etc.....	Well and city water.....	Spent liquor and dye.....	1,250	
Madison.....	Eagle Cotton Mills.....	45	Blankets, flannels, etc.....	City water.....	Peelings and wash water.....	1,650	
Bethlehem.....	J. S. Schofield and Sons' Co.....	70	Tomatoes.....	Well.....	Lime-bark liquor, hair and dirt.....	10,000	
New Albany.....	Bethlehem Canning Co.....	70	Leather.....	Well.....	Lime-bark liquor, hair and dirt.....	2,000	
New Albany.....	August Barth Co.....	35	Leather.....	Well.....	Lime-bark liquor, hair and dirt.....	10,000	
New Albany.....	Day Leather Co.....	100	Stoves.....	Well.....	Acid water.....	15,000	
New Albany.....	Anchor Stove Co.....	100	Leather.....	Well.....	Lime-bark liquor, hair and dirt.....	8,000	
New Albany.....	Geo. Moser Co.....	60	Leather.....	Well.....	Peelings and wash water.....	25,000	
Alton.....	Alton Canning Co.....	300	Tomatoes.....	River.....	Peelings and wash water.....	25,000	
Cannelton.....	Cotton Mills Co.....	42	Shedding.....	Well.....	Distillery slop.....	.....
Tell City.....	Tell City Canning Co.....	4	Whiskey.....	City water.....	Wool wastes.....	10,000	
Tell City.....	Krogerman's Distillery.....	48	Woolen goods.....	Well and city water.....	Spent liquor, lime, etc.....	1,000,000	
Tell City.....	Tell City Woolen Mills.....	50	Strawboard.....	Well.....	Silicates of soda.....	3,000	
Rockport.....	United Box Board Co.....	45	Coal and coke.....	City water.....	Acid water.....	.....
Evansville.....	Sunny Side Coal Co.....	45	Meats.....	City water.....	Wash water.....	.....
Evansville.....	Evansville Packing Co.....	115	Meats.....	City water.....	Wash water.....	.....
Evansville.....	Daudistel Packing Co.....	12	Coal.....	City water.....	Acid water.....	8,000	Solid matter taken to crematory.
Evansville.....	Crescent Coal Co.....	140	Tomatoes.....	City water.....	Peelings and wash water.....	10,000	Use 200 bbl. of lime per day.
Evansville.....	Indiana Canning Co.....	100	Pistachios.....	City water.....	Acid water.....	600,000	
Evansville.....	Evansville Pitting Works.....	17	Strawboard.....	River.....	Washings.....	.....
Mt. Vernon.....	Mt. Vernon Strawboard Works.....	75	Strawboard.....	River.....	Washings.....	.....

All manufacturing establishments in Indiana cities were visited, inspection being made at 187 places. Of this number there were but twenty-eight which might cause any pollution. Scattered as they are, and discharging but small amounts of waste, the chances for pollution of the river water hardly need to be considered.

Four of the twenty-eight listed are distilleries, three located at Lawrenceburg, and one small one at Tell City. The three at Lawrenceburg are located on Tanner's Creek, about two miles from its mouth. During much of the year there are about 1,600 head of cattle feeding at this point. All the manure goes into Tanner's Creek, and this, with other waste, renders it very foul and a public nuisance. The manure is sometimes a foot deep over the bed of the creek, in which it stands for weeks at a time. The stench which arises, especially in warm weather, is very offensive and at times is noticeably all over Lawrenceburg. The condition, although local, is a public nuisance and should be abated.

A sample of water collected at the mouth of the creek showed an entire absence of oxygen necessary to the support of aquatic life, and many dead fish were floating on the water. Only three days before there was a runout of the creek that gave it a thorough flushing out and the sample analyzed was collected under as favorable conditions as ever obtain. The volume of water flowing in the creek in comparison with the volume in the Ohio River is so small and the dilution so great, that the creek water has almost no effect upon the river. But a slight trace of pollution was found to exist in the sample of river water collected just below the mouth of the creek.

Some improvements are to be undertaken that will improve these conditions. The largest of the distilleries plans to build a modern dry house and do away with all cattle feeding. The second in size has built a road and will haul and sell the manure.

Seven canning companies, employing a total of 435 people, discharge about 3,000 gallons of peelings and waste a day into the river. One of the largest of the concerns, located at Evansville, hauls all the solid matter in the waste to the crematory. The canning companies are scattered along the river and no trace of any pollution from this source was to be found.

Four woolen and cotton mills, employing a total of seven hundred men, discharge about 50,000 gallons of spent liquor, dye and wash water a day.

Four leather and tanning works, employing 215 men, discharge about 30,000 gallons a day of lime and bark liquor, and hair and

dirt into the river. They are all located at New Albany and when the vats are emptied the coloring of the river water by this waste can be traced for a considerable distance down the river. It stays along the Indiana shore, and the line of demarcation between the two waters can easily be seen.

A stove works, two coal and coke companies and a plating works, employing 160 people, discharge 35,000 gallons of slightly acid water. The effects of this are quickly neutralized by the natural alkalinity of the river water.

Two strawboard works and one paper company, employing altogether 175 men, discharge over a million and a half gallons of wash water and other waste, to a considerable extent organic and putrescible.

Two packing houses located at Evansville have 130 employes and discharge a considerable amount of wash water each day into Pigeon Creek.

No attempt was made accurately to collect similar data at Ohio or Kentucky cities. A study of this problem at either Cincinnati, Ohio, or Louisville, Kentucky, is a complete one in itself, which would require much more time than we could give it.

Two other cities in Kentucky, Owensboro and Henderson, have a considerable number of manufacturing establishments, and a hurried inspection was made at both places. Owensboro has eight large distilleries, at which several thousand cattle are fed. The largest of the distilleries dries the slop. Most of the filth from this source finally finds its way into the river. A large cannery is also located here. It employs 400 people and discharges about 3,000-gallons of peelings and waste and about 40,000 gallons of wash water a day into a sewer which empties into the river. There are a number of other large manufacturing establishments here, but none causing any pollution. Henderson is quite an extensive manufacturing point, but none of consequence as regards pollution.

The problem of pollution caused by manufacturing wastes in Indiana is a small one and can be easily controlled.

GARBAGE.

Various methods are used for disposing of the garbage at different cities and towns. Three cities, Covington and Louisville, Kentucky, and Evansville, Indiana, incinerate all the garbage. Cincinnati uses the reduction method and all other cities and towns

that make systematic collection of the garbage dump along the river or bury it away from the river. Many of the towns have no system for the collection. Table 13 shows the various methods used for disposing of the garbage.

TABLE 13.

Data on Deposition of Garbage in Ohio River Cities.

METHOD.	Number of Cities and Towns.	Combined Estimated Population.
Crematory disposal.....	2	123,000
Reduction	1	263,500
Burial on river bottoms.....	1	30,000
Feeding hogs.....	1	4,000
Dumped into Ohio River or along shore.....	5	258,000
City dump away from river.....	4	50,000
No system.....	18	33,000

NIGHT SOIL.

Table 14 shows the various methods used for disposing of the night soil. Fifteen cities have a systematic method of collection, two abandon and fill in the vaults with dirt when they are full and dig new ones, while in seventeen cities the people dispose of the night soil without any supervision, and in any way that suits their convenience.

TABLE 14.

Data on the Deposition of Night Soil in Ohio River Cities.

METHOD.	Number of Cities and Towns.	Estimated Population.	Estimated Population Using Sewers.	Estimated Population Using Vaults.
Crematory.....	3	136,000	88,000	48,000
Burned or buried in rural district.....	5	45,000	9,000	36,000
Deposited in sewer manhole.....	5	628,000	424,000	204,000
Dumped into river or on shore.....	2	9,000	700	8,300
Filled vaults abandoned.....	2	21,000	7,000	14,000
No system.....	17	23,000	0	23,000

DESCRIPTION OF THE HOUSE BOAT.

The houseboat used on the trip was purchased in Covington, Kentucky, at the mouth of the Licking River. From this point it was towed to the Ohio side at Cincinnati, where it was fitted out for the trip.

The hull of the boat was twenty-eight feet long and eight feet wide and the cabin twenty feet long and eight feet wide. Besides providing the necessary working space for the analytical work,

living quarters were also installed in the small cabin. Every bit of available space was utilized.

A working table, ten feet in length by two in width, provided space for the chemical and bacterial work. It extended from one corner along the side of the boat to the center. Next to it was a gasoline stove which was used for sterilizing and other purposes in connection with the work. The 37.5° C. incubator was next to the stove and a cot followed it, occupying the space under the incubator, which was elevated, and extending to a set of shelves in the corner. The shelves were used to store our provisions. On the same side and above the working table, a double set of shelves were built. Upon these shelves all our chemicals and small apparatus was stored. Each shelf was provided with guards to prevent the goods from falling when the boat was rocked. In the case of the shelf where the chemicals were stored, a door on hinges and a catch was used. At times we experienced considerable rocking, and safeguarding precautions were necessary. A long shelf or bench was built under the working table, and upon this was kept the bed clothes, steam sterilizer, bacteria plates and large pans and buckets.

The ice box was placed on the other side of the boat, beginning at the same end where the working table was located. Attached to it on one side was the twenty-degree incubator connected to the ice box with a hole which had been cut through it. The temperature was regulated by a slide which admitted as much of the cold air to the incubator as was necessary. Next to the ice box was a writing shelf, which, when not in use, could be lowered and put out of the way. Following this were two cots, one above the other. They were attached to the side of the wall by hinges and when not in use could be raised and fastened flat against the wall. The cot on the other side was arranged in the same way. The remaining space on this side was occupied by a table, and in the corner was another gasoline stove upon which all the cooking was done.

All other available space, such as that above windows and doors, was used for shelves. On one end of the boat and outside the cabin, a shelf was built to hold a five- and ten-gallon gasoline can and a gallon can for cylinder oil. A small tub was fastened to a nail and hung under this shelf. On the other side a drop bench was provided, large enough to hold a washbasin. The chairs used while eating were hung upon a peg on the same side. An extra cot was fastened to the ceiling. The other end of the boat was kept free, as it was from this end that the samples were collected.

Both the exterior and interior were painted and the words "Water Laboratory, Indiana State Board of Health" were painted on the boat in large letters. The accompanying cut gives a general idea of the outfit.

Considerable trouble and inconvenience was experienced, due to the leaking of the hull. Before loading it was dry and these leaks probably were due to strains developed by the heavy loading. This necessitated considerable bailing and pumping and became so bad that the boat was pulled on shore at Aurora, Indiana, and all the seams were caulked. The hull was found to be in bad condition when it was exposed. Several times after this leaks developed,



but by the use of fine sawdust the bailing was reduced to a minimum. At the very end of the trip, after most of the weight was taken off, several bad leaks developed. The water came in so fast that it would have sunk the boat in a short time, but for the constant bailing. Most of the trouble was located and the leaks caulked under water.

MODE OF TRAVEL.

An eighteen foot launch furnished the necessary power and also provided means for making trips after supplies. The launch was purchased at Lawrenceburg, Indiana, and proved quite serviceable. The hull was in good shape but the engine had been much used and needed repairs.

Several modes of travel were suggested, and of these, two were

tried. At the beginning of the trip the launch was tied to the side of the houseboat at the rear and allowed to extend back several feet so rudder power could be obtained. This way was satisfactory

the collection of additional samples away from the mouth. Samples in the Kentucky and Green rivers were taken three miles back from their mouths. At the time it was visited, the Wabash River

Both the exterior and interior were painted and the words "Water Laboratory, Indiana State Board of Health" were painted on the boat in large letters. The accompanying cut gives a general

ull was in good shape but the engine had been much used . needed repairs.

Several modes of travel were suggested, and of these, two were

tried. At the beginning of the trip the launch was tied to the side of the houseboat at the rear and allowed to extend back several feet so rudder power could be obtained. This way was satisfactory until one or two heavy winds were encountered and it was found that the engine in the launch was not powerful enough to handle the houseboat, the wind surface presented on the latter being so large that the boat became unmanageable. To overcome this, it was found necessary to tow, and the launch pulled the houseboat the remaining part of the trip. At Louisville we were caught by the wind and but for the extreme low water, both the houseboat and launch would have gone over the falls.

In making landings, our first mode of travel was more convenient, as it was easier to handle the outfit; then too, when stopping for a short time only it was not necessary to untie the launch. Unfamiliarity with the landing places made landing quite awkward at times. While moving it was difficult to tell whether the current was swift or whether there was an eddy. It was necessary to stop the engine altogether when approaching landings, and many times it was necessary to jump into the water and hold the boat off to keep it from hitting too hard or to pull it ashore with a rope.

COLLECTING SAMPLES.

The accompanying map shows the sampling points. Both the bacterial and chemical samples were taken at the same points and therefore have the same numbers. Samples were collected in the channel of the river every mile with the exception of about sixty miles, where samples were collected every two miles. At Louisville and New Albany samples were taken every half mile along the city front in the channel of the river. At Louisville and Jeffersonville special samples were collected at the mouth of sewers, or if they were under water, as near to the mouth as possible.

It was the intention to collect samples from all tributaries, but in case of creeks most of them were dried up during the first part of the trip and during the latter part they were filled with back water from the river, as determined by a few analyses. This accounts for the comparatively few samples taken from creeks. In regard to the samples taken from rivers, the one taken from the Miami was at the mouth. The water was not deep enough to allow the collection of additional samples away from the mouth. Samples in the Kentucky and Green rivers were taken three miles back from their mouths. At the time it was visited, the Wabash River

was very high and the current so swift that it was with difficulty any headway could be made against it in the launch and the only sample taken was at a point about one-fourth mile from the mouth.

Samples were also collected in cities and towns in Indiana where public supplies were in use, especial attention being given to those supplies taken from the river.

It may be interesting to know how the sampling points were located. Fortunately, maps on a large scale, one and one-third inches to the mile, were obtained from the U. S. Engineers at Cincinnati, and these, with the aid of the Government Light Book, were sufficient to determine fairly accurately each mile. Many mile points were located opposite lights, and the lights themselves were seldom more than three or four miles apart and the next light could be located before getting out of sight of the one in the rear. By following the lights it was possible to keep in the channel of the river and avoid dykes, bars and other obstructions. The bends in the river and the cities and towns also assisted greatly in locating the points.

The bacterial samples were collected about three feet below the surface of the water and the chemical samples about one foot below.

At the beginning of the trip, three persons were kept busy managing the boat and collecting samples and a landing was made before any of the analytical work was done. After becoming more accustomed to the work, it was found that one person could stay inside and work on the samples, one run the launch and the third watch the channel and collect the samples, and this explains the reason for the longer trips made toward the end of the trip. By the time ten or twelve miles had been covered, most of the samples were analyzed, leaving only the counting and daily routine work. From Louisville, Kentucky, on there were but two in the party, but by towing the houseboat, one could watch the map and lights for the course and sampling points and take care of the launch, giving a signal to the man working on the inside when it was time to collect the next sample.

CHEMICAL DATA OF THE RIVER WATER.

As a mass of figures means very little until after laborious study, the results obtained have been depicted graphically. Table 15 shows the data from which the charts are constructed.

Three hundred and fifty-seven miles of the river was covered and analyses made every mile, with the exception of sixty-six miles

located on the charts between miles 651 and 717, where it was found necessary to make rapid time, because of our ice supply. If samples could have all been taken at the same time at all of these sampling points, a better idea of the condition of the river at a known stage could be obtained. Again, if a float could have been placed in the river channel and we could have followed it, taking samples of relatively the same water on its way down the river, our results would have shown the amount of self-purification taking place in the same water and as well the influx of additional polluting material.

The data obtained is the result of analyses covering a period of three months with a wide variation in the river stage. This variation is very important in its relation to the chemical composition of the water and is included in the tables with the chemical and bacterial data. The dotted lines on the charts represent the river stage, and the distance from one circle to the other on the dotted line the length of one day's travel. This does not represent consecutive days of travel, as in some cases several days elapsed between days of sampling. The total trip required about ninety days, while the days of sampling shown are forty. This means that analyses of river water were made on forty different days. Allowing a current of three miles per hour in the river channel, the water we analyzed at the Fernbank dam would be at Louisville in two days.

The content of chlorine, nitrates, nitrites, dissolved oxygen, oxygen consumed and the alkalinity of the river water was determined. All the data is given as parts per 100,000. On the charts the river stage is shown in feet. The sampling points are located as "miles from Pittsburgh."

The chlorine is fairly uniform for the first half of the trip, in fact, up to the point where the first rise of the river was experienced. An increase in the chlorine content is seen at the first rise of the river, although a decrease might logically be expected with a large amount of rain and a consequent dilution of the river water. This increase may be accounted for by the drying up, or nearly so, of a good many small rivers and streams, thus allowing all the sewage and waste to form pools and evaporate. The first washout of these streams would naturally wash out all these pools, resulting in a larger increase in the chlorine content of the river water than could be offset by the amount of rainfall. That this theory is at least plausible, if not conclusive, is shown in the chart at the beginning of the second and higher stage of the river, at which

point the chlorine content is reduced to nearly half and remains nearly constant during the remainder of the trip.

The nitrates and nitrites vary but little the greater part of the survey. An unusual jump is found at the mouth of the Miami River, where the nitrates increase from about .005 parts per hundred thousand to .100 parts per hundred thousand. The nitrites are low at this point. At Tanner's Creek these conditions are just reversed, and the nitrites increase from .0004 to .0100 parts per hundred thousand, while the nitrates are low. There is a sudden drop in the nitrites and an increase in the nitrates for the next few miles down the river, after which the nitrate and nitrite content are fairly constant until the beginning second high water stage, at which point there is a gradual increase in the nitrates, the nitrites remaining uniform.

The dissolved oxygen is nearly uniform for the whole length of the survey and does not vary to any great extent. One variation is perhaps explained by the fact that between miles 659 and 685, the samples were not taken in the channel of the river, which was filled with drift-wood. At the beginning of second rise in the river, there was a slight drop in dissolved oxygen, which was continued until Evansville was reached. Here a stop of a couple of weeks was made and on again making the analyses of the river water a slight increase was noted.

The oxygen consumed and the river stage curve follow each other, in that a rise in the river is followed by a rise in the oxygen consumed. At times it was impossible always to get samples in the river channel, and those taken near shore were invariably slightly higher in oxygen consumed. This was strikingly noticeable at the high water period, when a few samples were collected near shore where the weeds were covered and had started to decay.

With the exception of one point at the Miami River, the alkalinity is uniform for the first part of the survey, or until the river began to rise. The alkalinity of the Miami River is much higher than that of the Ohio River, which accounts for the rise at this one point. When the river began to rise the alkalinity was, as might be expected, reduced one-half. The increase shown at mile 750 comes with the second rise in the river and may be accounted for by heavy rains and a run out of a river where the alkalinity is very high, influencing the curve shown to the degree it does.

Data of similar work, covering time and distance, so that it would be comparable with the results of this work, would be very interesting.

TABLE 15.

Samples from the Ohio River.

DATE.	Laboratory Number.	Sampling Point, Miles from Pittsburgh.	CHEMICAL.					BACTERIAL.		RIVER STAGE.		Remarks.		
			Chlorine.	Nitrates.	Nitrites.	Dissolved Oxygen.	Oxygen Consumed.	Alkalinity.	Turbidity.	Bacteria per C.C.	Coli Presumptive Test.		Cincinnati.	Evansville.
July 7	1	481	1.4	.002	.0001	.755	.52	7.4	Dec	22,000	+	8	3	Heavy rain in the afternoon. Opposite Light No. 296, also opposite mouth of Big Miami.
July 7	2	482	1.6	.004	.0001	.698	.32	6.2	Dec	16,000	+	8	2	
July 7	3	483	1.2	.003	.0006	.721	.36	5.2	Dec	10,300	+	8	2	
July 7	4	484	2.0	.006	.0006	.846	.35	6.4	Dec	9,400	+	8	2	
July 7	5	485	2.0	.005	.0016	.816	.40	6.1	Dec	12,300	+	8	2	
July 7	6	486	2.2	.001	.0006	.788	.42	5.8	Dec	17,200	+	8	2	
July 7	7	487	2.4	.004	.0004	.562	.50	6.2	Dec	20,000	+	7	9	
July 8	8	488	2.4	.080	.0003	.581	.44	6.4	Dec	32,700	+	7	9	
July 10	10	489	1.0	.080	.0002	.806	.66	13.2	Vy. Dec	28,000	+	6	7	
July 10	11	490	3.0	.000	.0002	.639	.42	6.8	Vy. Dec	31,000	+	6	7	
July 10	12	491	3.5	.060	.0004	.707	.51	7.0	Vy. Dec	111,000	+	6	7	
July 11	13	492	2.4	.003	.0100	.820	.43	6.0	Dec	58,000	+	6	4	
July 11	14	493	2.2	.005	.0080	.786	.44	6.6	Dec	421,000	+	6	4	
July 11	15	494	2.3	.004	.0050	.694	.42	7.0	Dec	58,000	+	6	4	
July 14	18	495	2.6	.050	.0001	.916	.40	8.0	Dec	29,000	+	7	1	
July 14	19	496	2.0	.030	.0001	.674	.40	7.2	Dec	23,000	+	7	1	
July 14	21	497	1.6	.030	.0001	.694	.42	8.2	Dec	4,000	+	7	1	
July 14	22	498	2.2	.030	.0001	.677	.40	8.0	Dec	8,500	+	7	1	
July 15	23	499	2.8	.081	.0004	.676	.61	8.0	Dec	18,000	+	7	1	
July 15	24	500	2.6	.080	.0004	.720	.52	8.4	Dec	17,000	+	7	1	
July 17	25	501	2.6	.005	.0004	.710	.43	8.0	Dec	5,000	+	6	4	
July 17	26	502	2.2	.005	.0005	.663	.50	7.6	Dec	20,000	+	6	4	
July 17	27	503	2.4	.007	.0004	.844	.46	6.8	Dec	9,000	+	6	4	
July 17	28	504	2.4	.005	.0004	.714	.44	7.2	Dec	38,000	+	6	4	
July 18	29	505	2.0	.008	.0000	.912	.32	8.0	Dec	6,000	+	6	2	
July 18	30	506	2.4	.008	.0001	.862	.33	7.6	Dec	6,000	+	6	2	
July 18	31	507	2.6	.008	.0003	.896	.28	8.0	Dec	28,000	+	6	2	
July 19	32	508	2.4	.008	.0002	.619	.33	7.6	Dec	2,000	+	6	0	
July 19	33	509	2.4	.008	.0003	.729	.27	8.2	Dec	3,700	+	6	0	
July 19	34	510	2.4	.008	.0005	.683	.28	7.6	Dec	1,900	+	6	0	
July 19	35	511	2.3	.007	.0004	.689	.31	7.6	Dec	3,100	+	6	0	
July 19	36	512	2.3	.006	.0005	.697	.42	7.6	Dec	1,100	+	6	0	
July 19	37	513	2.2	.006	.0005	.739	.38	7.8	Dec	7,000	+	6	0	
July 19	38	514	2.4	.006	.0002	.715	.47	9.8	Vy. alt.	3,000	+	11	6	
Aug. 1	40	515	2.6	.005	.0002	.829	.49	9.8	Vy. alt.	5,000	+	11	6	
Aug. 1	41	515										2	9	Wickets being placed at Fernbank dam, July 20, 1896.

Wickets being placed at Fernbank dam, July 26.

TABLE 15—Continued.

Date	Laboratory Number	Sampling Point, Miles from Pittsburgh.	CHEMICAL.					BACTERIAL.		RIVER STAGE.		Remarks.		
			Chlorine.	Nitrates.	Nitrites.	Dissolved Oxygen.	Oxygen consumed.	Alkalinity.	Turbidity.	Bacteria per C.C.	Coli Presumptive Test.	Cincinnati.	Evansville.	
Aug. 1	42	516	2.6	.005	.0002	.767	.45	9.6	Vy. alt.	4,000	+	11.6	2.9	
Aug. 1	43	517	2.6	.004	.0002	.678	.43	10.8	Vy. alt.	7,000	+	11.6	2.9	
Aug. 1	44	518	2.6	.001	.0001	.747	.40	10.8	Vy. alt.	4,000	+	11.6	2.9	
Aug. 1	45	519	2.4	.004	.0002	.753	.48	10.8	Vy. alt.	3,000	+	11.6	2.9	
Aug. 1	46	520	2.6	.005	.0003	.781	.35	10.8	Vy. alt.	1,800	+	11.6	2.9	
Aug. 2	47		2.4	.020	.0003	.781	.33	10.4	Vy. alt.	1,200	+	11.4	3.2	
Aug. 2	48		2.4	.008	.0003	.718	.40	10.0	Vy. alt.	500	+	11.4	3.2	Rain. *A discrepancy on the map or the Light book.
Aug. 2	49	521	2.8	.006	.0002	.822	.43	9.6	Vy. alt.	700	+	11.4	3.2	
Aug. 2	50	522	2.8	.004	.0003	.804	.35	10.6	Vy. alt.	600	+	11.4	3.2	
Aug. 2	51	523	2.4	.004	.0003	.798	.41	10.4	Vy. alt.	900	+	11.4	3.2	
Aug. 2	52	524	2.4	.008	.0003	.735	.32	10.0	Vy. alt.	600	+	11.4	3.2	
Aug. 3	53	525	2.4	.007	.0003	.814	.33	10.0	Vy. alt.	1,100	+	11.4	3.2	
Aug. 3	55	526	2.4	.008	.0001	.822	.41	10.2	Vy. alt.	800	+	11.7	3.4	
Aug. 3	56	527	2.8	.005	.0001	.848	.38	10.0	Vy. alt.	1,000	+	11.7	3.4	
Aug. 3	57	528	3.2	.006	.0002	.820	.32	10.6	Vy. alt.	4,300	+	11.7	3.4	
Aug. 3	58	529	2.8	.003	.0002	.615	.30	10.0	Vy. alt.	1,400	+	11.7	3.4	
Aug. 3	59	530	2.6	.002	.0001	.640	.35	10.4	Vy. alt.	1,200	+	11.7	3.4	
Aug. 3	60	531	2.8	.004	.0002	.730	.35	10.6	Vy. alt.	2,100	+	11.7	3.4	
Aug. 3	61	532	2.8	.005	.0002	.743	.35	10.6	Vy. alt.	3,000	+	11.7	3.4	
Aug. 3	62	533	2.8	.002	.0003	.748	.37	11.0	Vy. alt.	1,700	+	11.7	3.4	
Aug. 3	63	534	2.4	.001	.0001	.853	.44	10.0	Vy. alt.	35,000	-	11.7	3.4	
Aug. 3	64	535	2.4	.003	.0002	.803	.28	10.8	Slt.	3,000	+	11.2	3.4	Rain in the morning. Water covered with foam.
Aug. 4	65	536	2.2	.003	.0003	.835	.23	10.0	Slt.	1,700	+	11.2	3.4	
Aug. 4	66	537	2.4	.004	.0003	.815	.33	9.6	Slt.	10,900	+	11.2	3.4	
Aug. 4	67	538	2.4	.004	.0002	.746	.29	11.6	Slt.	500	+	11.2	3.4	
Aug. 4	68	539	2.4	.005	.0003	.710	.31	11.2	Slt.	3,400	+	11.2	3.4	
Aug. 4	69	540	2.2	.004	.0003	.870	.27	9.6	Slt.	200	+	11.2	3.4	
Aug. 4	70	541	2.4	.004	.0003	.773	.27	8.0	Slt.	700	+	11.2	3.4	
Aug. 5	74	542	2.4	.004	.0002	.731	.40	10.8	Slt.	2,000	+	10.6	3.4	
Aug. 5	75	543	2.8	.005	.0003	.752	.40	10.0	Slt.	1,120	+	10.6	3.4	
Aug. 5	76	544	2.6	.005	.0003	.670	.61	10.4	Slt.	1,450	+	10.6	3.4	
Aug. 6	77	545	2.6	.004	.0002	.780	.38	10.0	Slt.	1,700	+	10.6	3.4	
Aug. 6	79	546	2.4	.004	.0003	.773	.34	10.6	Slt.	1,740	+	10.6	3.4	
Aug. 6	80	547	2.8	.04	.0003	.912	.30	10.0	Slt.	2,060	+	10.6	3.4	
Aug. 6	81	548	2.8	.004	.0003	.845	.39	10.0	Slt.	1,440	+	10.6	3.4	
Aug. 6	82	549	2.2	.005	.0004	.860	.37	9.8	Slt.	1,150	+	10.6	3.4	
Aug. 6	83	550	2.4	.004	.0003	.860	.39	10.0	Slt.	1,590	+	10.6	3.4	
Aug. 6	84		2.4								+			
Aug. 6	85										+			
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Aug. 6	182			</										

Aug. 5	551	2.8	.005	.0002	988	26	10.2	Slt.	1,170	+	10.6	3.4
Aug. 6	552	2.6	.005	.0003	982	26	9.2	Slt.	1,300	+	10.6	3.4
Aug. 7	553	2.6	.006	.0004	987	47	12.0	Much.	1,380	+	10.0	2.8
Aug. 7	554	2.0	.007	.0004	983	37	11.8	Much.	1,490	+	10.0	2.8
Aug. 7	555	2.0	.006	.0004	985	34	12.0	Much.	900	+	10.0	2.8
Aug. 7	556	2.0	.007	.0004	735	36	10.0	Much.	760	+	10.0	2.8
Aug. 7	557	2.2	.007	.0004	746	36	11.2	Much.	1,140	+	10.0	2.8
Aug. 7	558	2.0	.007	.0004	982	36	12.0	Much.	980	+	10.0	2.8
Aug. 7	559	2.4	.007	.0004	984	33	10.0	Vy. at.	1,630	+	9.5	2.8
Aug. 10	560	2.4	.003	.0004	912	32	10.0	Vy. at.	1,320	+	9.5	2.8
Aug. 10	561	2.4	.003	.0004	913	32	10.0	Vy. at.	1,470	+	9.5	2.8
Aug. 10	562	2.4	.003	.0004	913	32	9.2	Vy. at.	680	+	9.5	2.8
Aug. 10	563	2.4	.003	.0004	920	27	10.4	Vy. at.	490	+	9.5	2.8
Aug. 10	564	2.4	.003	.0004	923	40	10.0	Vy. at.	1,180	+	9.5	2.8
Aug. 10	565	2.4	.003	.0003	920	36	10.0	Vy. at.	583	+	9.5	2.8
Aug. 10	566	2.0	.003	.0003	928	40	10.2	Vy. at.	430	+	9.3	2.7
Aug. 11	567	2.2	.008	.0004	840	36	10.4	Vy. at.	400	+	9.3	2.7
Aug. 11	568	2.0	.010	.0004	732	42	10.4	Vy. at.	390	+	9.3	2.7
Aug. 11	569	2.4	.003	.0004	848	48	10.2	Vy. at.	450	+	9.3	2.7
Aug. 11	570	2.2	.004	.0004	803	37	10.0	Vy. at.	820	+	9.3	2.7
Aug. 11	571	2.2	.004	.0004	803	34	10.0	Vy. at.	1,700	+	9.3	2.7
Aug. 12	572	2.2	.005	.0003	820	44	9.4	Vy. at.	8,000	+	9.0	2.3
Aug. 12	573	2.2	.005	.0003	867	43	9.4	Vy. at.	370	+	9.0	2.3
Aug. 12	574	2.1	.007	.0008	865	40	9.2	Vy. at.	630	+	9.0	2.3
Aug. 12	575	2.2	.008	.0008	797	40	9.2	Vy. at.	10,600	+	9.0	2.3
Aug. 12	576	2.2	.008	.0008	851	39	9.1	Vy. at.	700	+	9.0	2.3
Aug. 12	577	2.2	.007	.0008	823	35	10.4	Slt.	70	+	6.7	2.4
Aug. 13	578	2.4	.005	.0006	946	42	10.4	Slt.	150	+	6.7	2.4
Aug. 13	579	2.4	.005	.0006	786	42	10.4	Slt.	300	+	6.7	2.4
Aug. 13	580	2.4	.003	.0006	822	36	9.4	Slt.	120	+	6.7	2.4
Aug. 13	581	2.2	.003	.0006	903	33	10.4	Slt.	160	+	6.7	2.4
Aug. 13	582	2.2	.003	.0006	865	34	10.2	Slt.	80	+	6.7	2.4
Aug. 13	583	2.4	.008	.0006	820	33	10.2	Slt.	340	+	6.7	2.4
Aug. 13	584	2.2	.003	.0006	814	34	10.4	Slt.	220	+	6.7	2.4
Aug. 13	585	2.4	.007	.0008	837	31	10.8	Slt.	220	+	6.7	2.4
Aug. 13	586	2.4	.008	.0008	814	37	10.4	Slt.	1,260	+	6.7	2.4
Aug. 14	587	2.2	.006	.0006	829	36	9.6	Slt.	2,100	+	10.0	2.6
Aug. 14	588	2.2	.005	.0006	837	36	10.0	Slt.	1,080	+	10.0	2.6
Aug. 14	589	2.2	.005	.0006	837	39	9.9	Slt.	1,350	+	10.0	2.6
Aug. 14	590	2.0	.004	.0006	813	37	9.8	Slt.	2,500	+	10.0	2.6
Aug. 14	591	2.4	.004	.0006	794	36	9.8	Slt.	460	+	10.0	2.6
Aug. 14	592	2.2	.010	.0008	780	40	10.0	Slt.	1,140	+	10.0	2.6
Aug. 14	593	2.2	.008	.0008	802	42	10.2	Slt.	960	+	10.0	2.6
Aug. 14	594	2.4	.005	.0008	878	33	10.0	Slt.	4,500	+	10.0	2.6
Aug. 14	595	2.2	.008	.0008	760	37	10.2	Slt.	1,460	+	10.0	2.6
Aug. 14	596	2.4	.005	.0006	673	84	10.0	Slt.	800	+	10.0	2.6
Aug. 15	597	2.0	.007	.0004	613	33	10.0	Slt.	800	+	12.2	2.4
Aug. 15	598 1/2	2.2	.007	.0003	706	27	10.4	Slt.	1,000	+	12.3	2.4

Heavy wind stirred water up.

Scum and fecal matter on water.

A short distance above Louisville Pumping Station.

TABLE 15—Continued.

Date.	Laboratory Number	Sampling Point, Miles from Pittsburg.	CHEMICAL.					BACTERIAL.		RIVER STAGE.		Remarks.		
			Chlorine.	Nitrates.	Nitrites.	Dissolved Oxygen.	Oxygen Consumed.	Alkalinity.	Turbidity.	Bacteria per C.C.	Coli Presumptive Test.		Cincinnati.	Evansville.
Aug. 15	136	597	2.2	.008	.0006	.710	.31	10.2	Slt.	220,000	—	12.2	2.4	Mouth of Canal, Louisville. Left channel River proper before joining lock water. Left channel under K. & I. bridge. Right channel, before meeting left, 800 feet below K. & I. bridge.
Aug. 15	137	597½	2.2	.010	.0004	.673	.30	9.2	Slt.	114,500	—	12.2	2.4	
Aug. 15	138	598	2.2	.015	.0004	.604	.29	9.2	Slt.	183,000	—	12.2	2.4	
Aug. 22	160	598½	2.6	.003	.0010	.821	.63	13.2	Dec.	149,000	—	12.0	2.4	
Aug. 22	161	600	2.6	.008	.0009	.375	.43	14.0	Dec.	17,000	—	12.0	2.4	
Aug. 22	162	600½	2.2	.008	.0006	.830	.31	12.0	Dec.	55,000	—	12.0	2.4	
Aug. 22	163	602	2.4	.001	.0008	1.028	.38	11.6	Dec.	31,000	—	12.0	2.4	Heavy rain in morning.
Aug. 22	164	602½	2.2	.008	.0002	.892	.33	10.8	Dec.	20,000	—	12.0	2.4	
Aug. 25	173	602½	2.6	.008	.0006	.935	.32	12.0	Slt.	9,600	—	11.8	2.7	
Aug. 25	174	603	2.6	.008	.0008	.847	.31	11.2	Slt.	13,400	—	11.8	2.7	
Aug. 25	175	603½	2.8	.006	.0008	.825	.28	12.8	Slt.	5,700	—	11.8	2.7	
Aug. 25	176	604	2.4	.006	.0008	.827	.37	10.8	Slt.	10,500	—	11.8	2.7	
Aug. 26	182	605	2.4	.005	.0014	.878	.26	12.0	Slt.	450,000	—	11.8	2.8	
Aug. 26	183	606	2.4	.005	.0014	.766	.25	12.6	Slt.	13,000	—	11.8	2.8	
Aug. 26	184	607	2.4	.005	.0014	.797	.51	12.4	Slt.	6,000	—	11.8	2.8	
Aug. 26	185	608	2.0	.004	.0008	.670	.31	12.0	Dec.	55,000	—	11.0	3.8	
Aug. 28	186	609	2.0	.004	.0007	.830	.28	12.0	Dec.	57,300	—	11.0	3.8	
Aug. 28	187	610	2.0	.004	.0007	.735	.28	12.0	Dec.	80,000	—	11.0	3.8	
Aug. 28	188	611	2.0	.004	.0007	.782	.29	12.4	Dec.	37,000	—	11.0	3.8	
Aug. 28	189	612	2.0	.004	.0008	.653	.29	12.0	Dec.	43,000	—	11.0	3.8	
Aug. 28	190	613	2.0	.004	.0009	.698	.27	12.4	Dec.	48,500	—	11.0	3.8	
Aug. 28	191	614	2.2	.004	.0008	.865	.29	12.2	Dec.	28,700	—	11.0	3.8	
Aug. 28	192	615	2.0	.004	.0008	.878	.41	12.0	Dec.	11,400	—	11.0	3.8	
Aug. 28	193	616	2.0	.004	.0007	.816	.45	12.2	Dec.	14,000	—	11.0	3.8	
Aug. 28	194	617	2.0	.004	.0006	.862	.44	12.0	Dec.	7,000	—	11.0	3.8	
Aug. 28	195	618	2.0	.004	.0007	.813	.36	12.0	Dec.	24,000	—	11.0	3.8	
Aug. 28	196	619	2.0	.004	.0008	.900	.41	12.0	Dec.	56,000	—	11.0	3.8	
Sept. 2	202	620	2.0	.015	.0009	.832	.33	9.6	Dec.	14,000	—	13.0	3.4	
Sept. 2	203	621	2.0	.012	.0011	.738	.34	9.8	Dec.	19,000	—	13.0	3.4	
Sept. 2	204	622	2.0	.011	.0017	.778	.34	10.4	Dec.	20,000	—	13.0	3.4	
Sept. 2	205	623	2.0	.012	.0015	.804	.32	10.4	Dec.	37,000	—	13.0	3.4	
Sept. 2	206	624	2.0	.012	.0014	.815	.26	10.6	Dec.	6,000	—	13.0	3.4	
Sept. 3	208	625	2.0	.014	.0014	.937	.36	10.6	Vy. dec.	10,000	—	17.9	3.1	
Sept. 3	209	626	2.0	.012	.0014	.861	.38	10.2	Vy. dec.	17,000	—	17.9	3.1	
Sept. 3	210	627	2.2	.014	.0014	.845	.35	10.2	Vy. dec.	28,000	—	17.9	3.1	
Sept. 3	211	628	2.0	.013	.0012	.814	.30	9.8	Vy. dec.	26,000	—	17.9	3.1	

Mouth of Canal, Louisville.
Left channel River proper before joining lock waters.
Left channel under K. & I. bridge.
Right channel, before meeting left, 900 feet below K. & I. bridge.

Heavy rain in morning.

222-225 collected on 3d, analysed on the
4th.

Sept. 3	212	639	2.0	.013	.0011	.880	.31	9.6	Vy. dec.	33,000	17.9	3.1
Sept. 3	213	630	2.0	.014	.0012	.885	.33	9.6	Vy. dec.	45,000	17.9	3.1
Sept. 3	214	631	2.0	.012	.0010	.813	.28	9.0	Vy. dec.	38,000	17.9	3.1
Sept. 3	215	632	2.0	.014	.0010	.865	.32	9.2	Vy. dec.	48,000	17.9	3.1
Sept. 3	216	633	2.0	.012	.0018	.787	.37	9.6	Vy. dec.	128,000	17.9	3.1
Sept. 3	217	634	2.0	.011	.0012	.780	.34	9.6	Vy. dec.	32,000	17.9	3.1
Sept. 3	218	635	2.0	.012	.0010	.783	.33	9.2	Vy. dec.	6,000	17.9	3.1
Sept. 3	219	636	2.0	.012	.0010	.733	.33	9.8	Vy. dec.	52,000	17.9	3.1
Sept. 3	220	637	2.0	.010	.0010	.730	.35	9.8	Vy. dec.	47,000	17.9	3.1
Sept. 3	221	638	2.0	.009	.0010	.797	.37	10.0	Vy. dec.	78,000	17.9	3.1
Sept. 3	222	639	1.8	.009	.0008	.810	.23	9.6	Vy. dec.	31,000	17.9	3.1
Sept. 3	223	640	1.8	.007	.0008	.880	.29	9.2	Vy. dec.	16,000	17.9	3.1
Sept. 3	224	641	1.8	.007	.0008	.780	.29	9.6	Vy. dec.	6,000	17.9	3.1
Sept. 3	225	642	1.8	.007	.0008	.788	.24	9.6	Vy. dec.	20,000	17.9	3.1
Sept. 4	226	643	2.6	.007	.0008	.727	.54	10.2	Vy. dec.	2,000	21.0	3.0
Sept. 4	227	644	2.4	.007	.0008	.816	.53	10.2	Vy. dec.	2,000	21.0	3.0
Sept. 4	228	645	2.4	.006	.0007	.706	.40	10.4	Vy. dec.	7,000	21.0	3.0
Sept. 4	229	646	2.4	.008	.0007	.844	.34	10.8	Vy. dec.	4,000	21.0	3.0
Sept. 4	230	647	2.2	.007	.0008	.910	.45	10.0	Vy. dec.	3,000	21.0	3.0
Sept. 4	231	648	2.4	.007	.0008	.848	.40	10.2	Vy. dec.	15,000	21.0	3.0
Sept. 4	232	649	2.2	.007	.0008	.782	.54	10.2	Vy. dec.	14,000	21.0	3.0
Sept. 4	233	650	2.4	.007	.0008	.890	.54	10.4	Vy. dec.	36,000	21.0	3.0
Sept. 4	234	651	2.4	.007	.0007	.853	.35	10.6	Vy. dec.	7,000	21.0	3.0
Sept. 4	235	652	2.4	.007	.0007	.860	.34	10.8	Vy. dec.	34,000	21.0	3.0
Sept. 4	236	653	2.4	.007	.0007	.840	.36	10.8	Vy. dec.	9,000	21.0	3.0
Sept. 4	237	657	2.4	.008	.0008	.816	.39	7.4	Vy. dec.	225,000	21.0	3.0
Sept. 6	240	659	2.8	.004	.0007	.879	.48	7.4	Vy. dec.	53,000	21.8	9.3
Sept. 6	241	661	2.8	.004	.0007	.847	.51	7.4	Vy. dec.	72,000	21.8	9.3
Sept. 6	242	663	3.0	.004	.0007	.845	.53	8.0	Vy. dec.	96,000	21.8	9.3
Sept. 6	243	665	3.0	.004	.0007	.845	.57	8.0	Vy. dec.	36,000	21.8	9.3
Sept. 6	244	667	3.0	.004	.0008	.861	.53	7.6	Vy. dec.	7,800	21.8	9.3
Sept. 6	245	669	3.1	.004	.0007	.894	.48	7.4	Vy. dec.	62,000	21.8	9.3
Sept. 6	246	671	3.1	.004	.0007	.868	.45	7.6	Vy. dec.	68,800	21.8	9.3
Sept. 6	247	673	2.8	.004	.0007	.887	.44	7.6	Vy. dec.	13,000	21.8	9.3
Sept. 6	248	675	2.8	.004	.0007	.880	.53	8.0	Vy. dec.	137,000	21.8	9.3
Sept. 6	249	677	3.0	.006	.0007	.891	.46	7.8	Vy. dec.	30,000	21.8	9.3
Sept. 6	250	679	3.0	.004	.0007	.894	.46	7.8	Vy. dec.	4,300	21.8	9.3
Sept. 6	251	681	3.1	.006	.0007	.903	.48	7.8	Vy. dec.	17,000	21.8	9.3
Sept. 6	252	683	3.1	.006	.0007	.874	.44	7.4	Vy. dec.	23,000	19.7	12.3
Sept. 6	253	685	2.8	.006	.0008	.887	.44	7.4	Vy. dec.	13,000	19.7	12.3
Sept. 7	254	687	2.8	.004	.0008	.892	.54	9.2	Vy. dec.	7,000	19.7	12.3
Sept. 7	255	689	2.8	.004	.0007	.894	.39	7.2	Vy. dec.	23,000	19.7	12.3
Sept. 7	256	691	2.8	.004	.0007	.893	.56	7.6	Vy. dec.	15,000	19.7	12.3
Sept. 7	257	693	3.0	.004	.0007	.783	.70	7.8	Vy. dec.	82,000	19.7	12.3
Sept. 7	258	695	2.8	.004	.0008	.732	.43	6.9	Vy. dec.	148,000	19.7	12.3
Sept. 7	259	697	2.8	.004	.0009	.761	.46	6.9	Vy. dec.	178,000	19.7	12.3
Sept. 7	260	699	2.8	.004	.0007	.794	.57	7.8	Vy. dec.	97,000	19.7	12.3
Sept. 7	261	701	2.8	.004	.0008	.806	.57	7.8	Vy. dec.		19.7	12.3

TABLE 15—Continued.

Date.	Laboratory Number.	Sampling Point, Miles from Pittsburgh.	CHEMICAL.					BACTERIAL.		River Spec.		Remarks.		
			Chlorine.	Nitrates.	Nitrites.	Dis- solved Oxygen.	Oxygen Con- sumed.	Alka- linity.	Turbidity.	Bacteria per C.C.	Coli Pre- sumptive Test.		Chlo- nati.	Exsuv- ville.
Sept. 7	262	703	2.8	.004	.0007	.836	.57	7.0	Vy. dec.	121,000	+	19.7	12.3	
Sept. 7	263	705	3.0	.004	.0008	.827	.57	10.0	Vy. dec.	163,000	+	19.7	12.3	
Sept. 7	264	707	2.8	.004	.0007	.852	.49	7.8	Vy. dec.	16,000	+	19.7	12.3	
Sept. 7	265	709	2.6	.004	.0007	.839	.48	7.8	Vy. dec.	35,000	+	19.7	12.3	
Sept. 7	266	711	2.6	.004	.0007	.817	.56	7.8	Vy. dec.	27,000	+	19.7	12.3	
Sept. 7	267	713	2.8	.004	.0007	.788	.55	8.0	Vy. dec.	142,000	+	19.7	12.3	
Sept. 7	268	715	3.0	.004	.0007	.845	.55	8.2	Vy. dec.	263,000	+	19.7	12.3	
Sept. 11	274	717	1.8	.008	.0004	.66	.40	6.0	Vy. dec.	7,400	+	13.6	13.3	
Sept. 11	275	718	1.8	.008	.0004	.697	.37	6.0	Vy. dec.	2,000	+	13.6	13.3	
Sept. 11	276	719	1.8	.008	.0004	.718	.60	6.0	Vy. dec.	1,800	+	13.6	13.3	
Sept. 11	277	720	1.8	.008	.0004	.889	.62	6.0	Vy. dec.	2,900	+	13.6	13.3	
Sept. 11	280	721	2.0	.006	.0004	.669	.90	6.0	Vy. dec.	4,600	+	13.6	13.3	
Sept. 11	281	722	2.0	.006	.0004	.664	.88	6.2	Vy. dec.	2,900	+	13.6	13.3	
Sept. 11	282	723	1.8	.007	.0004	.734	.71	6.2	Vy. dec.	6,700	+	13.6	13.3	
Sept. 11	283	724	1.8	.007	.0004	.859	.50	6.0	Vy. dec.	2,300	+	13.6	13.3	
Sept. 11	284	725	1.8	.006	.0004	.921	.56	5.6	Vy. dec.	4,900	+	13.6	13.3	
Sept. 11	285	726	2.0	.007	.0004	.696	.42	5.2	Vy. dec.	3,100	+	13.6	13.3	
Sept. 11	286	727	1.8	.006	.0004	.767	.95	5.6	Vy. dec.	3,100	+	13.6	13.3	
Sept. 12	287	728	2.0	.006	.0004	.671	.45	4.6	Vy. dec.	6,800	+	12.1	12.0	
Sept. 12	288	729	2.0	.006	.0004	.637	.48	4.6	Vy. dec.	13,000	+	12.1	12.0	
Sept. 12	289	730	2.0	.007	.0004	.668	.48	4.8	Vy. dec.	4,000	+	12.1	12.0	
Sept. 12	290	731	2.2	.007	.0004	.935	.55	4.8	Vy. dec.	26,000	+	12.1	12.0	
Sept. 12	291	732	2.4	.006	.0004	.885	.49	4.6	Vy. dec.	26,000	+	12.1	12.0	
Sept. 12	292	733	2.0	.006	.0004	.932	.48	4.8	Vy. dec.	4,600	+	12.1	12.0	
Sept. 12	293	734	2.0	.007	.0004	.963	.49	4.6	Vy. dec.	14,000	+	12.1	12.0	
Sept. 12	294	735	1.6	.006	.0004	.846	.45	4.6	Vy. dec.	23,000	+	12.1	12.0	
Sept. 12	295	736	1.8	.006	.0004	.935	.34	4.4	Vy. dec.	18,000	+	12.1	12.0	
Sept. 12	296	737	1.6	.007	.0004	.865	.47	4.2	Vy. dec.	20,000	+	12.1	12.0	
Sept. 12	297	738	1.6	.007	.0004	.820	.49	4.0	Vy. dec.	76,000	+	12.1	12.0	
Sept. 12	298	739	1.8	.007	.0004	.848	.44	4.2	Vy. dec.	30,000	+	12.1	12.0	
Sept. 12	299	740	1.8	.007	.0004	.865	.47	4.2	Vy. dec.	63,000	+	12.1	12.0	
Sept. 12	300	741	1.2	.005	.0001	.632	.45	5.2	Vy. dec.	75,000	+	19.5	10.0	
Sept. 15	303	742	1.1	.006	.0001	.664	.49	5.4	Vy. dec.	13,000	+	19.5	10.0	
Sept. 15	304	743	1.2	.003	.0001	.621	.56	4.6	Vy. dec.	84,000	+	19.5	10.0	
Sept. 15	305	744	1.2	.007	.0001	.645	.50	4.6	Vy. dec.	4,000	+	19.5	10.0	
Sept. 15	306	745	1.2	.008	.0001	.644	.42	4.2	Vy. dec.	78,000	+	19.5	10.0	
Sept. 15	307	746	1.2	.008	.0001	.667	.72	4.6	Vy. dec.	300,000	+	19.5	10.0	

Sept. 15	309	747	1.3	.008	.0001	703	.57	4.4	V7	260,000	++	19.5	10.0
Sept. 15	310	748	1.3	.008	.0001	713	.57	4.4	V7	43,000	++	19.5	10.0
Sept. 15	311	749	1.3	.008	.0001	677	.57	4.6	V7	10,000	++	19.5	10.0
Sept. 15	312	750	1.0	.020	.0001	680	.94	6.9	V7	425,000	++	20.0	13.0
Sept. 15	313	751	1.0	.020	.0001	614	.85	6.9	V7	26,000	++	20.0	13.0
Sept. 15	314	752	1.0	.020	.0001	616	.80	7.4	V7	35,500	++	20.0	13.0
Sept. 15	315	753	1.0	.020	.0001	604	.81	7.6	V7	27,300	++	20.0	13.0
Sept. 15	316	754	1.0	.020	.0001	694	.87	7.6	V7	10,200	++	20.0	13.0
Sept. 15	317	755	1.2	.015	.0001	614	.82	7.2	V7	3,000	++	20.0	13.0
Sept. 15	318	756	1.1	.015	.0001	593	.81	7.6	V7	211,000	++	20.0	13.0
Sept. 15	319	757	1.0	.015	.0001	606	.84	7.6	V7	175,000	++	20.0	13.0
Sept. 15	320	758	1.0	.020	.0001	620	.80	7.2	V7	244,000	++	20.0	13.8
Sept. 15	321	759	1.1	.020	.0001	618	.82	7.4	V7	231,000	++	20.0	13.8
Sept. 15	322	760	1.1	.020	.0001	631	.78	7.6	V7	337,000	++	20.0	13.8
Sept. 15	323	761	1.2	.020	.0001	613	.79	7.2	V7	28,000	++	20.0	13.8
Sept. 15	324	762	1.0	.020	.0001	618	.84	7.4	V7	8,600	++	20.0	13.8
Sept. 15	325	763	1.0	.020	.0001	594	.86	7.6	V7	13,000	++	20.0	13.8
Sept. 15	326	764	1.0	.020	.0001	607	.72	7.4	V7	10,700	++	20.0	13.8
Sept. 15	327	765	1.0	.020	.0001	604	.78	7.8	V7	4,000	++	20.0	13.8
Sept. 15	328	766	1.0	.020	.0001	598	.80	7.8	V7	600,000	++	20.0	13.8
Sept. 15	329	767	1.0	.020	.0001	620	.84	8.0	V7	128,000	++	20.0	13.8
Sept. 15	330	768	1.0	.015	.0001	627	.79	7.2	V7	66,000	++	20.8	15.4
Sept. 15	331	769	1.1	.015	.0001	632	.74	7.2	V7	180,000	++	24.8	15.4
Sept. 15	332	770	1.1	.015	.0001	608	.69	7.6	V7	426,000	++	24.8	15.4
Sept. 15	333	771	1.0	.015	.0001	608	.75	7.6	V7	800,000	++	24.8	15.4
Sept. 15	334	772	1.0	.020	.0001	615	.75	7.6	V7	632,000	++	24.8	15.4
Sept. 15	335	773	1.2	.020	.0001	596	.72	7.4	V7	120,000	++	24.8	15.4
Sept. 15	336	774	1.2	.015	.0001	608	.79	7.4	V7	237,000	++	24.8	15.4
Sept. 15	337	775	1.1	.015	.0001	625	.81	7.6	V7	94,000	++	24.8	15.4
Sept. 15	338	776	1.2	.020	.0001	608	.87	6.8	V7	650,000	++	24.8	15.4
Sept. 15	339	777	1.1	.020	.0001	630	.74	6.8	V7	840,000	++	24.8	15.4
Sept. 15	340	778	1.1	.020	.0001	628	.76	7.0	V7	330,000	++	24.8	15.4
Sept. 15	341	779	1.2	.020	.0001	617	.70	7.0	V7	3,300	++	24.8	15.4
Sept. 15	342	780	1.1	.020	.0001	637	.72	7.0	V7	560,000	++	24.8	15.4
Sept. 15	343	781	1.1	.020	.0001	634	.67	7.2	V7	600,000	++	24.8	15.4
Sept. 15	344	782	1.1	.020	.0001	637	.60	6.0	V7	23,000	++	20.4	20.9
Sept. 15	345	783	1.5	.020	.0001	603	.70	6.4	V7	49,000	++	20.4	20.9
Sept. 15	346	784	1.6	.025	.0000	597	.80	6.0	V7	19,000	++	21.9	22.7
Sept. 15	347	785	.8	.025	.0000	685	.94	4.6	V7	418,000	++	13.4	14.9
Sept. 15	348	786	.9	.020	.0001	706	.82	4.8	V7	825,000	++	13.4	14.9
Sept. 15	349	787	.9	.020	.0001	677	.83	4.8	V7	140,000	++	13.4	14.9
Sept. 15	350	788	.9	.020	.0001	684	.78	4.6	V7	65,000	++	13.4	14.9
Sept. 15	351	789	.9	.020	.0001	672	.94	4.4	V7	33,000	++	13.4	14.9
Sept. 15	352	790	1.0	.010	.0002	663	.87	4.8	V7	279,000	++	13.4	14.9
Sept. 15	353	791	.9	.020	.0002	683	.83	4.4	V7	142,000	++	13.4	14.9
Sept. 15	354	792	.9	.020	.0002	6.7	.67	4.6	V7	175,000	++	13.4	14.9
Sept. 15	355	793	.9	.020	.0002	672	.58	5.0	V7	18,000	++	13.4	14.9
Sept. 15	356	794	1.0	.030	.0002	668	.63	4.8	V7	23,000	++	13.4	14.9

TABLE 16—Continued.

Date.	Laboratory Number.	Sampling Point. Miles from Pittsburgh.	CHEMICAL.					BACTERIAL.		RIVER STAGE.		Remarks.		
			Chlorine.	Nitrates.	Nutrition.	Dis- solved Oxygen.	Oxygen Con- sumed.	Alka- linity.	Turbidity.	Bacteria	Coli Pre- sumptive Test.			
										per C.C.				
Sept. 30	366	795	.8	.030	.0032	.728	.80	4.6	Vy. dec.	58,000	+	12.4	13.0	
Sept. 30	367	796	.8	.030	.0032	.754	.84	4.6	Vy. dec.	74,000	+	12.4	13.0	
Sept. 30	368	797	.9	.030	.0032	.702	.89	4.4	Vy. dec.	28,000	+	12.4	13.0	
Sept. 30	369	798	.9	.030	.0032	.719	.85	4.8	Vy. dec.	385,000	+	12.4	13.0	
Sept. 30	370	799	.9	.030	.0032	.718	.83	4.8	Vy. dec.	250,000	+	12.4	13.0	
Sept. 30	371	800	1.0	.030	.0032	.736	.64	4.6	Vy. dec.	14,000	+	12.4	13.0	
Sept. 30	372	801	.9	.030	.0032	.738	.65	4.8	Vy. dec.	16,500	+	12.4	13.0	
Sept. 30	373	802	.9	.030	.0032	.722	.60	5.6	Vy. dec.	8,000	+	12.4	13.0	
Sept. 30	374	803	.9	.030	.0032	.710	.78	5.6	Vy. dec.	7,000	+	12.4	13.0	
Sept. 30	375	804	.9	.030	.0032	.711	.47	5.4	Vy. dec.	4,000	+	12.4	13.0	
Sept. 30	376	805	.9	.030	.0032	.734	.55	5.4	Vy. dec.	3,000	+	12.4	13.0	
Sept. 30	377	806	.9	.030	.0032	.752	.42	5.2	Vy. dec.	11,000	+	12.4	13.0	
Sept. 30	378	807	1.0	.030	.0032	.747	.59	5.2	Vy. dec.	4,000	+	12.4	13.0	
Sept. 30	379	808	.8	.030	.0032	.719	.49	5.0	Vy. dec.	18,000	+	12.4	13.0	
Sept. 30	380	809	1.0	.030	.0032	.729	.46	5.0	Vy. dec.	33,000	+	12.4	13.0	
Sept. 30	381	810	1.0	.030	.0032	.718	.50	5.0	Vy. dec.	9,000	+	12.4	13.0	
Sept. 30	382	811	.9	.030	.0032	.719	.55	5.0	Vy. dec.	15,000	+	12.4	13.0	
Sept. 30	383	812	1.1	.030	.0032	.693	.59	5.4	Vy. dec.	11,000	+	12.4	13.0	
Sept. 30	384	813	1.0	.030	.0032	.722	.67	5.4	Vy. dec.	11,000	+	12.4	13.0	
Sept. 30	385	814	.9	.030	.0032	.664	.80	4.4	Vy. dec.	3,000	+	12.4	13.0	
Sept. 30	386	815	1.0	.030	.0032	.696	.55	4.4	Vy. dec.	10,000	+	12.4	13.0	
Sept. 30	387	816	1.0	.030	.0032	.702	.48	4.4	Vy. dec.	17,000	+	12.4	13.0	
Sept. 30	388	817	1.0	.030	.0032	.718	.48	4.6	Vy. dec.	16,000	+	12.4	13.0	
Sept. 30	389	818	1.0	.030	.0032	.702	.46	4.4	Vy. dec.	6,000	+	12.4	13.0	
Sept. 30	390	819	1.0	.030	.0032	.707	.45	4.4	Vy. dec.	12,000	+	12.4	13.0	
Oct. 2	395	820	.9	.025	.0031	.803	.38	4.4	Dec.	23,800	+	11.2	10.5	
Oct. 2	396	821	1.0	.025	.0031	.815	.44	4.8	Dec.	3,300	+	11.2	10.5	
Oct. 2	397	822	1.0	.025	.0031	.776	.45	4.8	Dec.	5,300	+	11.2	10.5	
Oct. 2	398	823	1.0	.030	.0031	.788	.47	5.0	Dec.	2,500	+	11.2	10.5	
Oct. 2	399	824	1.0	.030	.0031	.798	.40	4.8	Dec.	2,300	+	11.2	10.5	
Oct. 2	400	825	.9	.030	.0031	.808	.43	4.8	Dec.	2,100	+	11.2	10.5	
Oct. 2	401	826	.9	.025	.0031	.768	.53	4.8	Dec.	5,300	+	11.2	10.5	
Oct. 2	402	827	1.0	.025	.0031	.821	.70	4.8	Dec.	4,700	+	11.2	10.5	
Oct. 2	403	828	1.0	.025	.0031	.756	.45	4.8	Dec.	9,700	+	11.2	10.5	
Oct. 2	404	829	1.0	.025	.0031	.764	.37	4.8	Dec.	4,200	+	11.2	10.5	
Oct. 2	405	830	1.0	.025	.0031	.735	.49	5.0	Dec.	7,800	+	11.2	10.5	
Oct. 2	406	831	.9	.030	.0031	.762	.45	5.2	Dec.	8,400	+	11.2	10.5	

Oct. 2	407	832	.9	.030	.0001	.781	.39	4.8	Dec.....	5,300	++	11.2	10.5
Oct. 2	408	833	.9	.030	.0001	.759	.40	4.8	Dec.....	2,400	++	11.2	10.5
Oct. 2	409	834	.9	.035	.0001	.743	.43	4.8	Dec.....	6,500	++	11.2	10.5
Oct. 2	410	835	.9	.035	.0001	.756	.54	5.0	Dec.....	4,500	++	11.2	10.5
Oct. 2	411	836	.9	.035	.0001	.724	.42	4.8	Dec.....	3,900	++	11.2	10.5
Oct. 2	412	837	.9	.035	.0001	.738	.38	4.8	Dec.....	3,300	++	11.2	10.5
Oct. 2	413	838	.9	.035	.0001	.762	.35	5.2	Dec.....	3,800	++	11.2	10.5

BACTERIAL ANALYSES OF THE RIVER WATER.

The bacterial count was made on samples at the same points as the chemical samples and therefore one laboratory number suffices for both. A presumptive test for *B. coli* was made on all samples, and on about every tenth sample a positive test for the colon bacillus was made. In the determination of positive *coli* the following tests were made: fermentation in lactose and dextrose broth, litmus lactose agar culture, gelatin liquification, indol reaction and nitrite reduction. The results of the positive *B. coli* test are shown in Table 16.

Table 15 shows the bacteria counts on gelatin at twenty degrees and the presumptive test for *B. coli*.

The accompanying chart shows graphically the bacteria counts on the river water for the entire survey. The river stage in feet is also shown on this chart. The bacterial counts are shown as bacteria per c. c. in thousands.

One count on a sample at Lawrenceburg was very much higher than the average, indicating the existence of some abnormal condition which caused the jump.

After leaving this point, the effect of sedimentation is readily seen. The river was low, with a corresponding slight current. Until Louisville was reached the bacterial counts remained low, even Madison with its sewers making no material difference.

At Louisville there was a decided increase in bacteria, dropping down somewhat after passing the city but remaining fairly high until the first high water came. This increased the counts to some extent, due to the washing out of the watersheds of the river responsible for the rise. There was a drop in the river stage just before the second and higher rise, at which period the counts were low. The counts were correspondingly higher at the second period, and drop down as the river lowers. This all seems to confirm the statement made in regard to the chlorine content of the water at corresponding periods, that is, that pools were formed in stream beds and at other places where sewage and waste were discharged. These contained organic matter on which the bacteria lived and increased, and when the rains and high water came all this concentrated waste was washed into the various tributaries and finally found its way to the Ohio River.

TABLE 16.
B. Celi Positive Tests, Ohio River Samples.

Date.	Laboratory Number.	Sampling Point.	Lecithine Broth.	Agar Culture.	Gelatin Tube.	Dextrose Broth.	Indol Reaction.	Nitrite Reduction.	Results.	Remarks.
July 10	10	489	+++	+++	++	+++	+++	+	+++	
July 18	30	506	+++	+++	++	+++	+++	+	+++	
Aug. 1	40	514	+++	+++	++	+++	+++	+	+++	
Aug. 2	50	522	+++	+++	++	+++	+++	+	+++	
Aug. 3	60	531	+++	+++	++	+++	+++	+	+++	
Aug. 4	70	541	+++	+++	++	+++	+++	+	+++	
Aug. 5	80	547	+++	+++	++	+++	+++	+	+++	
Aug. 6	90	557	+++	+++	++	+++	+++	+	+++	
Aug. 7	100	564	+++	+++	++	+++	+++	+	+++	
Aug. 10	110	574	+++	+++	++	+++	+++	+	+++	
Aug. 12	120	584	+++	+++	++	+++	+++	+	+++	
Aug. 13	130	593	+++	+++	++	+++	+++	+	+++	
Aug. 14	140	603	+++	+++	++	+++	+++	+	+++	
Aug. 23	190	613	+++	+++	++	+++	+++	+	+++	
Sept. 3	210	637	+++	+++	++	+++	+++	+	+++	
Sept. 3	220	637	+++	+++	++	+++	+++	+	+++	
Sept. 4	230	647	+++	+++	++	+++	+++	+	+++	
Sept. 6	240	661	+++	+++	++	+++	+++	+	+++	
Sept. 6	250	679	+++	+++	++	+++	+++	+	+++	
Sept. 7	260	699	+++	+++	++	+++	+++	+	+++	
Sept. 11	280	721	+++	+++	++	+++	+++	+	+++	
Sept. 12	290	731	+++	+++	++	+++	+++	+	+++	
Sept. 14	310	748	+++	+++	++	+++	+++	+	+++	
Sept. 18	320	758	+++	+++	++	+++	+++	+	+++	
Sept. 19	330	768	+++	+++	++	+++	+++	+	+++	
Sept. 19	340	777	+++	+++	++	+++	+++	+	+++	
Sept. 25	350	784	+++	+++	++	+++	+++	+	+++	
Sept. 29	360	789	+++	+++	++	+++	+++	+	+++	
Sept. 30	370	799	+++	+++	++	+++	+++	+	+++	
Sept. 30	380	809	+++	+++	++	+++	+++	+	+++	
Sept. 30	390	819	+++	+++	++	+++	+++	+	+++	
Oct. 2	400	825	+++	+++	++	+++	+++	+	+++	
Oct. 2	410	835	+++	+++	++	+++	+++	+	+++	

CHEMICAL AND BACTERIAL ANALYSES OF DATA FROM CITIES AND TOWNS. •

Samples of water were collected at cities and towns where a public water supply system was maintained, especial attention being given those using the river as the source of supply.

The quality of water found at the cities using river water from storage reservoirs or direct pressure was usually of doubtful purity. Madison, New Albany, Cannelton, Newburg, Evansville and Mt. Vernon samples showed the presumptive test for *B. coli* on nearly all tests, and in at least one sample from each city the differential test was positive, showing that the use of the water is attended with great danger to the public health.

The analyses made of the samples from cities and towns are shown in Table 17. The *B. coli* positive tests are shown in Table 18.

TABLE 17.
Samples from Cities and Towns.

DATE.	Laboratory Number.	Sampling Point, Miles from Pittsburg.	CHEMICAL.						BACTERIAL.		RIVER STAGE.		Remarks.	
			Chlorine.	Nitrates.	Nitrites.	Dissolved Oxygen.	Oxygen Consumed.	Alkalinity.	Turbidity.	Bacteria per C.C.	Coli Presumptive Test.	Cincinnati.		Evansville.
Aug. 8	92	Madison.	2.0	.009	.0002	.720	.29	10.4	Much....	1,190	+	9.7	2.7	Tap at Eggleston School.
Aug. 8	93	533	2.0	.010	.0002	.748	.21	10.4	None....	1,650	+	9.7	2.7	Filter at Eggleston School.
Aug. 8	94	Jeffersonville.	1.0	2.000	.0000	.902	.32	26.8	None....	45	-	9.7	2.7	Cragmont Asylum.
Aug. 19	150	597½	5.4	.100	.0003	.367	.38	38.8	None....	69	-	11.2	2.4	Well corner Market and Spring. 42 feet deep.
Aug. 19	151	597½	1.0	.000	.0001	.742	.17	24.0	None....	50	-	11.2	2.4	Tap. Water Works Office.
Aug. 19	152	597½	3.0	.250	.000	.335	.19	31.2	None....	90	-	11.2	2.4	Reformatory Pasture Well.
Aug. 19	153	597½	4.2	.301	.0000	.804	.03	38.4	None....	175	-	11.2	2.4	Reformatory Pasture Well No. 1
Aug. 21	154	597½	7.6	.040	.0002	.562	.08	40.0	None....	398	-	12.0	2.3	Well, Spring and Maple.
Aug. 21	155	597½	5.0	.040	.0003	.224	.16	39.2	None....	212	+	12.0	2.3	Well, Chestnut and Wall.
Aug. 24	165	New Albany.	2.4	.004	.0005	.797	.47	10.4	Slt....	3,200	+	11.8	2.5	Reservoir Inlet.
Aug. 24	166	603	2.2	.004	.0006	.853	.36	9.6	Slt....	4,800	+	11.8	2.5	Reservoir Outlet.
Aug. 24	167	603	2.4	.004	.0002	.832	.33	10.0	Slt....	580	+	11.8	2.5	Dr. Shacklett's Office tap.
Aug. 24	168	603	2.4	.004	.0002	.703	.25	10.0	Slt....	800	-	11.8	2.5	Crescend drug store.
Aug. 24	169	603	2.4	.006	.0002	.800	.27	10.0	Slt....	1,340	-	11.8	2.5	Tab. bakery, Vincennes and Elms.
Aug. 24	170	603	7.4	.350	.0006	.663	.11	42.0	None....	33	-	11.8	2.5	Well, driven, 1st and Main, 42 feet deep.
Aug. 24	171	603	14.6	.800	.0040	.897	.06	38.8	None....	1,160	+	11.8	2.5	Well, driven, 7th and Spring, 38 feet deep.
Aug. 24	172	603	9.0	.400	.0034	.782	.13	41.6	None....	5	-	11.8	2.5	Well, driven, Vincennes and Elms, 22 feet deep.
Aug. 25	177	Jeffersonville.	4.2	.300	.0002	.603	.12	32.2	None....	39	-	11.8	2.7	Reformatory Well No. 1.
Aug. 25	178	597½	2.4	.250	.0001	.729	.14	35.6	None....	670	+	11.8	2.7	Reformatory Well No. 2.
Aug. 25	179	597½	2.4	.250	.0003	.441	.11	32.8	None....	1,850	-	11.8	2.7	Reformatory Well No. 3.
Aug. 25	180	597½	3.6	.250	.0003	.624	.08	36.0	None....	1,650	-	11.8	2.7	Reformatory Pasture Wells.
Aug. 30	197	New Albany.	7.8	.750	.0009	.670	.18	41.2	None....	1,030	+	11.7	3.9	Well, 11th and Elm, driven, 40 ft. deep.
Aug. 30	198	603	12.5	.090	.0400	.448	.24	54.8	None....	325	+	11.7	3.9	Well, Vincennes and Charleston Rd., dug, 28 ft. deep.
Aug. 30	199	603	4.2	.060	.0000	.978	.33	27.6	None....	825	+	11.7	3.9	Well, 1818 Beaver St., dug, 26 ft. deep.

TABLE 17—Continued.

Date.	Laboratory Number.	Sampling Point, Miles from Pittsburgh.	CHEMICAL.						BACTERIAL.		River Stages.		Remarks.	
			Chlorine.	Nitrates.	Nitrites.	Dis- solved Oxygen.	Oxygen Consumed.	Alka- linity.	Turbidity.	Bacteria per C.C.	Coli Pre- sumptive Test.	Cincin- nati.		Evans- ville.
Aug. 30	200	603	2.2	.004	.0100	.998	.27	11.6	None....	1,650	+	11.7	3.9	Tap, grocery, Vincennes and Charleston Road.
Aug. 30	201	603 Leaven- worth h.	6.4	.070	.0100	.441	.08	44.4	None....	1	—	11.7	3.9	Well, 6th and Elms, driven, 36 ft. deep.
Sept. 5	238	638	.6	.006	.0002	.987	.29	13.2	None....	1,350	—	22.0	4.6	Tap, Dr. Dean's office. Public water supply from a spring.
Sept. 6	239	638 Cannelton.	8.6	.006	.0006	.796	.10	43.6	None....	300	—	21.8	9.3	Public well opposite post office.
Sept. 9	269	717	2.6	.006	.0004	.845	.26	10.4	Slt.....	10,500	+	14.3	15.0	Reservoir.
Sept. 9	270	717	5.6	.100	.0006	.877	.04	2.4	None....	390	+	14.3	15.0	Public well, Madison and 6th.
Sept. 9	271	717	5.8	.500	.0006	.762	.21	2.0	None....	240	+	14.3	15.0	Public well, Washington and 4th.
Sept. 9	272	717	3.6	.006	.0002	.817	.66	8.4	Vy. dec..	7,400	+	14.3	15.0	Tap, Schlemmer's bakery.
Sept. 9	273	717	3.4	.006	.0002	.853	.66	8.4	Vy. dec..	8,700	+	14.3	15.0	Tap, Clark's grocery.
Sept. 11	278	720	2.6	.250	.0002	.385	.05	29.6	None....	40	—	13.5	13.3	Tap, Hotel Yaggi.
Sept. 11	279	720 Rockport.	2.6	.250	.0002	.516	.05	29.6	None....	90	—	13.5	13.3	Tap, Dr. Cluthe's office.
Sept. 13	300	740½	1.2	.080	.0001	.351	.03	27.6	None....	3	—	14.7	10.7	Tap, Water Company's office.
Sept. 13	301	740½	1.0	.020	.0004	.299	.00	28.8	None....	2,500	—	14.7	10.7	Tap, new well No. 4, pump house.
Sept. 13	302	740½	1.0	.060	.0003	.628	.04	31.2	None....	1,400	—	14.7	10.7	Tap, J. H. Walker's grocery.
Sept. 19	332	769 Newburg.	1.2	.008	.0014	.284	.27	5.8	Dec.....	300,000	+	24.8	15.4	Tap in restaurant, river water.
Sept. 25	352	783 Evansville.	1.6	.015	.0001	.594	1.14	5.0	Vy. dec..	65,000	+	21.9	22.7	Tap, Hallman Machine Works.
Sept. 25	353	783	1.4	.015	.0001	.637	1.22	5.0	Vy. dec..	18,800	+	21.9	22.7	Tap, City Hall, Health Office.
Sept. 25	354	783 Woodmere Asylum, Evansville.	1.6	.015	.0001	.814	.108	5.0	Vy. dec..	12,400	+	21.9	22.7	Tap, upstairs, H. A. Gook's grocery.
Sept. 27	355	783 Mt. Vernon.	3.4	.020	.0008	.812	.08	16.8	None....	140	—	15.7	19.2	Tap in men's dining room. Water has been softened.
Oct. 1	391	819½	1.0	.080	.0002	.819	.22	3.8	None....	206	+	11.5	11.6	Clear well at water works.
Oct. 1	392	819½	1.0	.080	.0002	.765	.23	3.6	None....	149	+	11.5	11.6	Tap, Electric Light and Power Plant.
Oct. 1	393	819½	1.0	.080	.0002	.762	.24	3.6	None....	259	+	11.5	11.6	Tap, Fogg's Drug store.
Oct. 1	394	819½	1.0	.080	.0002	.913	.20	3.6	None....	99	+	11.5	11.6	Tap, Walker's bakery.

TABLE 18.
B. Celi Positive Tests. Miscellaneous Samples.

Date.	Laboratory Number.	Sampling Point.	Lactose Broth.	Agar Culture.	Gelatin Tube.	Dextrose Broth.	Indol Reaction.	Nitrite Reduction.	Results.	Remarks.
July 14	20	Laughery's Creek.	+++	+++	+++	+++	+++	+++	+++	Tap, Eggleston School.
Aug. 8	92	Madison.	+++	+++	+++	+++	+++	+++	+++	Filter, Eggleston School.
Aug. 8	93	Madison.	+++	+++	+++	+++	+++	+++	+++	Cragmont Asylum.
Aug. 8	94	Madison.	+++	+++	+++	+++	+++	+++	+++	Well, corner Market and Spring Sts.
Aug. 19	150	Jeffersonville.	---	---	---	---	---	---	---	Tap, water works office.
Aug. 19	151	Jeffersonville.	---	---	---	---	---	---	---	Reformatory Pasture well.
Aug. 19	152	Jeffersonville.	---	---	---	---	---	---	---	Reformatory Well No. 1.
Aug. 19	153	Jeffersonville.	---	---	---	---	---	---	---	Well Spring and Maple Sts.
Aug. 21	154	Jeffersonville.	---	---	---	---	---	---	---	Well, Chester and Wall Sts.
Aug. 21	155	Jeffersonville.	---	---	---	---	---	---	---	Mouth of canal.
Aug. 22	160	Louisville.	+++	+++	+++	+++	+++	+++	+++	Reservoir Inlet.
Aug. 24	165	New Albany.	+++	+++	+++	+++	+++	+++	+++	Tap, Crechius' drug store.
Aug. 24	168	New Albany.	---	---	---	---	---	---	---	Well, 1st and Main Sts.
Aug. 24	170	New Albany.	---	---	---	---	---	---	---	Reformatory, Well No. 1.
Aug. 25	177	Jeffersonville.	---	---	---	---	---	---	---	Reformatory, Well No. 2.
Aug. 25	178	Jeffersonville.	---	---	---	---	---	---	---	Reformatory, Well No. 3.
Aug. 25	179	Jeffersonville.	---	---	---	---	---	---	---	Reformatory Pasture wells.
Aug. 25	180	Jeffersonville.	---	---	---	---	---	---	---	Well, 11th and Ekin Sts.
Aug. 30	197	New Albany.	---	---	---	---	---	---	---	Well, Vincennes and Charleston Road.
Aug. 30	198	New Albany.	+++	+++	+++	+++	+++	+++	+++	Well, 1818 Beaver St.
Aug. 30	199	New Albany.	+++	+++	+++	+++	+++	+++	+++	Tap, grocery, Vincennes and Charleston Road.
Aug. 30	200	New Albany.	---	---	---	---	---	---	---	Well, 6th and Elmes Sts.
Aug. 30	201	New Albany.	---	---	---	---	---	---	---	Well, Madison and 6th Sts.
Sept. 9	270	Cannelton.	---	---	---	---	---	---	---	Tap, Sehlmer's bakery.
Sept. 9	272	Cannelton.	---	---	---	---	---	---	---	Tap, Water Company's office.
Sept. 13	300	Rockport.	---	---	---	---	---	---	---	Tap, Helman Machine Works.
Sept. 25	332	Evansville.	---	---	---	---	---	---	---	Tap, men's dining room.
Sept. 27	355	Woodmere Asylum.	---	---	---	---	---	---	---	Tap, Electric Light and Power Plant.
Oct. 1	382	Mt. Vernon.	---	---	---	---	---	---	---	Tap, Walter's bakery.
Oct. 1	394	Mt. Vernon.	---	---	---	---	---	---	---	

CHEMICAL AND BACTERIAL DATA FROM TRIBUTARIES.

Many small creeks and runs empty into the Ohio River, but as elsewhere stated, most of them were dry at the time of the survey. Many of them were local in character, extending back but short distances and draining small territories and an analysis of the water, if a sample could have been obtained, would have given data of little value. Where running water was found in a stream, the sample collected was taken at a sufficient distance from the river proper to assure a representative specimen of the water.

The composition of most of the samples analyzed varied but little from that of the Ohio River water. The Miami River sample showed a high nitrate and a high bacterial count, but it drains a large and a thickly populated territory and received considerable manufacturing waste. The bacterial count on water taken from Grant's Creek, for some undetermined reason, is very high. The creek is a small one and no apparent cause can be seen for a bacterial condition which is far more unsatisfactory than that of other streams with similar surroundings.

In the case of several small creeks passing through cities or towns and receiving sewage and manufacturing waste, the increased factors of pollution were easily accounted for. Four such examples, Tanners Creek at Lawrenceburg, Beargrass Creek at Louisville, Falling Run Creek at New Albany and Pigeon Creek at Evansville, were found to be badly polluted. Mention of the condition of the first two have been made elsewhere. Falling Run Creek receives wastes of a manufacturing concern and a slaughterhouse as it passes through the city. All the sewage of the city is conveyed to one outlet, which is at the mouth of the creek. All the wash water of two large packing houses empties into Pigeon Creek and the sewage of a considerable portion of Evansville is conveyed to it at five different points. The sample analyzed was taken under conditions favorable to its purity as the river was high and the creek filled with back water, and the dilution was much greater than it would have been at a lower level. Table 19 gives the results of analyses of samples collected from tributaries.

TABLE 19.
Samples from Tributaries, Rivers and Creeks.

Date.	Laboratory Number.	Sampling Point. Miles from Pittsburg.	CHEMICAL.					BACTERIAL.		RIVER STAGE.		Remarks.		
			Chlorine.	Nitrates.	Nitrites.	Dissolved Oxygen.	Oxygen Consumed.	Alkalinity.	Turbidity.	Bacteria per C.C.	Coli Presumptive Test.		Cincinnati.	Evansville.
July 10	9	Big Miam River. 489	1.0	.200	.0006	.709	.84	19.0	Vy. dec.	325,000	+	6.7	5.9	200 ft. from Ohio shore line.
July 11	14	Tanner's Creek. 492½	1.0	.001	.0050	.000	3.10	15.6	Dec.	30,000	+	6.4	6.0	Dead fish in creek.
July 11	17	Hogan's Creek. 494½	2.0	.006	.0080	.650	.44	7.2	Dec.	25,000	+	6.4	6.0	Under railroad bridge.
July 14	20	Laubach's Creek. 497	.8	.010	.0001	.720	.63	14.4	Dec.	7,000	+	7.1	5.4	No current in creek. Taken 200 ft. from mouth.
July 18	32	Grant's Creek. 507½	1.8	.009	.0004	1.100	.34	6.0	Slt.	265,000	+	6.2	5.2	No current. 100 ft. from mouth.
July 19	37	Gunpowder Creek. 511½	2.4	.007	.0003	.830	.42	9.2	Slt.	4,600	+	6.0	5.2	No current. 100 ft. from mouth.
Aug. 3	54	Craig's Creek. 525½	2.2	.005	.0003	.828	.40	9.8	Vy. slt.	3,600	-	11.7	3.4	Four hours rain during night. 20 ft. from mouth.
Aug. 4	71	Kentucky River. 541	3	.000	.0000	.871	.40	10.0	Vy. slt.	90	+	11.2	3.4	2 miles from mouth.
Aug. 4	72	" " " " " " 541	3	.000	.0000	.850	.42	10.0	Vy. slt.	280	-	11.2	3.4	1 mile from mouth.
Aug. 4	73	Indian Ken. River. 541	3	.000	.0000	.900	.38	9.8	Vy. slt.	8,000	-	11.2	3.4	Under bridge. About 100 ft. from mouth.
Aug. 5	78	Indian Ken. River. 545½	.6	.000	.0002	.816	.41	9.2	Slt.	3,800	+	10.6	3.4	Vy. slight current. 200 ft. from mouth.
Aug. 14	127	Harrod's Creek. 591	2.4	.006	.0004	.787	.47	10.6	Slt.	1,410	-	10.0	2.5	800 ft. from mouth.
Aug. 26	181	Falling Run Creek. 604	8.8	.150	.0150	.485	.79	28.0	Dec.	450,000	+	11.8	2.8	At falls.
Sept. 3	207	Salt River. 624	1.8	.007	.0014	.734	.36	7.2	Dec.	11,000	+	17.9	3.1	500 ft. from mouth.
Sept. 23	345	Green River. 775½	.7	.010	.0001	.686	.33	9.2	Dec.	2,000	+	29.4	20.9	2 miles from mouth.
Sept. 23	346	" " " " " " 775½	.6	.010	.0001	.779	.27	9.4	Dec.	4,000	+	29.4	20.9	1 mile from mouth.
Sept. 23	348	Little Bayou. 782½	1.4	.020	.0001	.555	.47	9.0	Vy. dec.	95,000	+	29.4	20.9	100 ft. from mouth.
Sept. 25	351	Pigeon Creek. 783½	1.6	.010	.0005	.354	.50	6.2	Vy. dec.	700,000	+	21.9	22.7	100 ft. above railroad bridge.
Oct. 2	414	Wabash River. 838½	.8	.020	.0003	.528	.61	3.2	Vy. dec.	7,900	+	11.2	10.5	¼ mile from mouth, river high and current swift.

CHEMICAL AND BACTERIAL DATA ON THE RIVER WATER AT CINCINNATI AND LOUISVILLE.

Chemical and bacterial analyses of the river water is made each day at the filtration plants at Cincinnati and Louisville. The average results by months of daily chemical and bacterial analyses of the Ohio River water at both places for 1911 are given in Tables 20 and 22. For three months of 1911—July, August and September—while this survey was in progress, the daily analyses at both cities were obtained and they are shown in Tables 21 and 23.

A study of the results at both places show that the chemical and bacterial content at both places is practically the same at both intakes of each pumping station. The data obtained will be valuable for purposes of comparison in connection with any data gathered in the future.

TABLE 20.
Average Results by Months of Daily Chemical and Bacterial Analyses of Ohio River Water at Cincinnati, Ohio, for 1911.
PARTS PER MILLION.

Months.	Chlorine.	AMMONIA.		Nitrates.	Nitrites.	Oxygen Consumed.	Dissolved Oxygen.	Alkalinity.	Turbidity.	Bacteria per C.C.	Presumptive Coli. Per Cent. Positive.
		Free.	Albuminoid.								
January.....	11.5	.080	.315	.65	.0050	7.2	12.5	31.7	240	63,000	100.0
February.....	10.1	.049	.165	.66	.0041	5.9	11.9	29.9	190	15,500	94.2
March.....	10.9	.037	.148	.47	.0053	4.8	12.1	30.0	140	9,600	80.5
April.....	9.0	.028	.206	.46	.0046	5.0	11.2	32.0	160	7,000	96.7
May.....	13.0	.016	.145	.28	.0022	3.4	10.0	43.0	55	2,090	74.2
June.....	22.0	.021	.181	.25	.0028	3.0	6.7	51.0	76	1,288	76.8
July.....	23.0	.020	.150	.25	.0023	2.5	7.1	52.0	50	453	71.0
August.....	30.0	.018	.140	.17	.0041	2.8	7.1	73.0	64	1,780	83.2
September.....	19.0	.027	.312	.57	.0099	8.3	7.1	34.0	410	7,115	80.0
October.....	10.7	.03	.234	.39	.0036	6.5	9.5	30.0	257	8,168	94.5
November.....	13.8	.035	.188	.37	.0021	5.7	11.9	38.0	148	22,800	100.0
December.....	11.7	.045	.172	.57	.0045	5.0	14.0	38.0	128	26,640	100.0
Average.....	15.4	.034	.196	.494	.0042	5.0	10.1	40.2	159	13,786	.....

TABLE 21.
Results of Daily Chemical and Bacterial Analyses of Ohio River Water at Cincinnati, Ohio, for July, 1911.
 PARTS PER MILLION.

DAY.	Chlorine.	AMMONIA.		Nitrate.	Nitrite.	Oxygen Consumed.	Dissolved Oxygen.	Alkalinity.	Turbidity.	Bacteria per C.C.	Coli.
		Free.	Albuminoid.								
1.....	22					3.7			150	1,000	+
2.....	23							42	55	900	+
3.....	21					2.7		42	55	900	+
4.....	20	.024	.183	.24	.0020			39	40	400	+
5.....	20					3	90.5% 7.1	41	40		+
6.....	22					2.5		39	35	375	+
7.....	22					2.3		41	50	350	+
8.....	20					2.9		40	140	1,000	+
9.....	18							40	120	400	+
10.....	17	.026	.153	.28	.0020	2.4		40	70	800	+
11.....	20					2.7		45	110		+
12.....	20					2.5	81.5% 6.5	46	100	700	+
13.....	20					2.0		47	55	1,100	+
14.....	23					2.4		49	60	1,100	+
15.....	24					2.2		49	45	425	+
16.....	19							46	35	110	+
17.....	19	.016	.143	.24	.0018	2.8		48	35	250	+
18.....	19					2.6		50	40	380	+
19.....	19					2.1	87.9% 7.1	54	25	200	+
20.....	22					2.5		55	35	290	+
21.....	21					2.1		54	40		+
22.....	21					2.1		55	22	320	+
23.....	22							55	18	230	+
24.....	22	.014	.130	.22	.0035	2.2		57	20	120	+
25.....	26					2.5		65	15	200	+
26.....	26					2.6	91.2% 7.6	70	15		+
27.....	28					2.4		70	9	940	+
28.....	30					2.2		73	12	240	+
29.....	32					2.3		73	15	330	+
30.....	30					2.2		67	16	200	+
31.....	30					2.2		66	17	150	+
Average.....	23	.020	.150	.25	.0023	2.5	87.8% 7.1	53	50	452	9-, 22+

TABLE 21—Continued.
Results of Daily Chemical and Bacterial Analyses of Ohio River Water at Cincinnati, Ohio, for August, 1911.
 PARTS PER MILLION.

Day.	Chlorine.	AMMONIA.		Nitrates.	Nitrites.	Oxygen Consumed.	Dissolved Oxygen.	Alkalinity.	Turbidity.	Bacteria per C.C.	Coli.
		Free.	Albuminoid.								
1.....	29	.016	.122	.12	.0030	2.5	.....	66	17	140	—
2.....	.....	.....	.....	.....	.....	2.6	.....	62	17	170	—
3.....	26	.....	.....	.....	.....	10.3	.....	61	900	37,000	—
4.....	30	.....	.....	.....	.....	2.5	.....	63	80	900	—
5.....	.....	.....	.....	.....	.....	2.4	.....	68	45	1,100	—
6.....	36	.....	.....	.....	.....	.....	.....	70	30	.....	—
7.....	35	.....	.....	.....	.....	2.6	78.5%, 6.5	71	45	180	—
8.....	36	.014	.144	.12	.0060	2.6	.....	74	20	490	—
9.....	36	.....	.....	.....	.....	2.4	.....	77	23	260	—
10.....	33	.....	.....	.....	.....	2.5	.....	80	15	290	—
11.....	32	.....	.....	.....	.....	2.3	.....	84	9	200	—
12.....	33	.....	.....	.....	.....	2.5	.....	83	15	370	—
13.....	31	.....	.....	.....	.....	.....	.....	88	18	.....	—
14.....	30	.....	.....	.....	.....	2.5	.....	90	19	460	—
15.....	29	.020	.150	.18	.0055	2.5	87.1%, 6.8	81	12	500	—
16.....	27	.....	.....	.....	.....	3.3	.....	77	150	490	—
17.....	25	.....	.....	.....	.....	2.5	.....	68	100	500	—
18.....	26	.....	.....	.....	.....	2.4	.....	67	50	.....	—
19.....	26	.....	.....	.....	.....	2.3	.....	67	45	.....	—
20.....	23	.....	.....	.....	.....	.....	.....	68	20	450	—
21.....	25	.....	.....	.....	.....	2.4	.....	72	25	400	—
22.....	28	.020	.188	.20	.0015	2.5	10.5%, 7.4	78	28	250	—
23.....	36	.....	.....	.....	.....	2.0	.....	82	25	340	—
24.....	36	.....	.....	.....	.....	2.7	.....	75	26	380	—
25.....	33	.....	.....	.....	.....	2.4	.....	71	30	.....	—
26.....	34	.....	.....	.....	.....	2.7	.....	70	50	650	—
27.....	34	.....	.....	.....	.....	.....	.....	72	40	460	—
28.....	32	.....	.....	.....	.....	2.4	.....	71	41	370	—
29.....	29	.020	.098	.24	.0045	2.4	.....	70	25	270	—
30.....	29	.....	.....	.....	.....	2.3	.....	66	25	370	—
31.....	28	.....	.....	.....	.....	2.2	91.5%, 7.8	66	24	330	—
Average.....	30	.018	.140	.17	.0041	2.8	86.9%, 7.1	73	64	1,780	13—, 18+

TABLE 21—Continued.
Results of Daily Chemical and Bacterial Analyses of Ohio River Water at Cincinnati, Ohio, for September, 1911.
 PARTS PER MILLION.

DAY.	Chlorine.	AMMONIA.		Nitrates.	Nitrites.	Oxygen Consumed.	Dissolved Oxygen.	Alkalinity.	Turbidity.	Bacteria per C.C.	Coli.
		Free.	Albuminoid.								
1.....	28					2.4		70	40	2,000	+
2.....	27					6.4		71	240	2,300	+
3.....	36							51	600	2,000	+
4.....	36							58	440	2,500	+
5.....	36					10.5		31	340	3,000	+
6.....	29	.038	.270	.42	.0320	7.3		24	250	2,600	+
7.....	17					6.8		20	200	2,000	+
8.....	15					8.3		23	230	2,400	+
9.....	15					8.8		23	170	1,100	+
10.....	15					12.6		23	640	17,500	+
11.....	14	.018	.210	.36	.0030	4.8		32	340	12,900	+
12.....	18					0	76.2%; 6.5	35	420	3,000	+
13.....	24					8.4		35	350	3,000	+
14.....	18					7.4		37	350	3,600	+
15.....	18					9.8		41	600	17,500	+
16.....	20					9.8		37	620	11,000	+
17.....	17							39	700	32,000	+
18.....	17	.028	.416	.68	.0025	9.7		35	800	15,600	+
19.....	16					11.4	84.0%; 7.2	35	800	15,600	+
20.....	16					14.2		38	1,100	11,400	+
21.....	15					10.3		35	820	11,400	+
22.....	12					9.8		20	420	6,800	+
23.....	12					7.5		23	360	3,300	+
24.....	12							26	270	3,300	+
25.....	11	.022	.350	.80	.0020	7.3		27	390	4,000	+
26.....	13					8.4		31	390	4,300	+
27.....	12					7.0		30	280	1,400	+
28.....	12					6.7	85.5%; 7.6	31	230	1,600	+
29.....	12					6.7		30	200	2,400	+
30.....	12					5.8		30	200	1,350	+
Average.....	19	.027	.312	.57	.0099	8.3	81.9%; 7.1	34	410	7,115	2-24+47

TABLE 22.
Average Results by Months of Daily Chemical and Bacterial Analyses of Ohio River Water at Louisville, Ky., for 1911
Parts Per Million.

Month.	Chlorine.	Ammonia.		Nitrate.	Nitrite.	Oxygen Consumed.	Alkalinity.	Hardness.	Turbidity.	Bacteria Per C.C.	Coli.
		Free.	Albuminoid.								
January.....	9.4	.083	.224	.83	.0050	9.3	62	88	425	28,250	4
February.....	7.2	.064	.137	.68	.0040	7.0	57	79	310	11,600	4
March.....	6.3	.068	.104	.59	.0040	8.6	57	80	240	13,000	12
April.....	7.4	.057	.131	.59	.0036	6.8	57	74	300	9,450	20
May.....	11.8	.017	.116	.43	.0034	3.2	73	90	100	1,870	15
June.....	21.9	.015	.073	.31	.0074	1.8	83	123	30	850	0
July.....	22.0	.000	.067	.48	.0100	2.4	73	110	80	720	7
August.....	26.0	.017	.087	.39	.0090	2.2	100	131	15	435	6
September.....	20.0	.005	.285	.53	.0050	6.0	50	92	325	7,900	20
October.....	11.0	.016	.330	.46	.0040	7.8	60	80	445	11,200	18
November.....	11.0	.013	.198	.63	.0040	5.3	64	97	195	16,700	21
December.....	10.0	.022	.270	.77	.0030	6.4	66	98	230	21,600	29
Average.....	13.7	.031	.159	.55	.0052	5.6	67	95	225	10,289	13

TABLE 23.
Results of Daily Chemical and Bacterial Analyses of Ohio River Water at Louisville, Ky., for July, 1911.
 PARTS PER MILLION.

Day.	Chlorine.	AMMONIA.		Nitrates.	Nitrites.	Oxygen Consumed.	Alkalinity.	Hardness.	Turbidity.	Bacteria Per C.C.	Coli.
		Free.	Albuminoid.								
1.....	26	.000	.060	.50	.0090	2.0	69	125	60	2,600	-
2.....	26	.000	.080	.66	.0080	3.1	70	120	130	2,600	-
3.....	22	.000	.196	.70	.0080	4.4	67	105	390	1,700	-
4.....	22	.000	.108	.64	.0070	3.4	64	105	475	2,200	-
5.....	23	.000	.070	.66	.0060	2.3	69	110	240	800	-
6.....	23	.000	.050	.58	.0070	2.2	70	115	115	1,300	+
7.....	24	.000	.026	.46	.0040	2.5	65	110	65	800	-
8.....	24	.000	.066	.44	.0030	2.2	61	105	25	750	-
9.....	23	.000	.040	.36	.0030	1.9	59	95	18	450	-
10.....	23	.000	.026	.40	.0070	2.5	58	90	20	300	-
11.....	23	.000	.060	.42	.0160	1.9	63	100	37	375	-
12.....	22	.000	.040	.36	.0240	2.1	74	110	65	350	-
13.....	21	.000	.052	.50	.0200	2.4	77	115	55	475	-
14.....	18	.000	.090	.52	.0180	2.6	75	105	90	350	+
15.....	18	.000	.076	.46	.0240	2.7	72	105	90	650	-
16.....	18	.000	.048	.54	.0280	2.4	77	115	135	900	+
17.....	18	.000	.072	.62	.0200	2.4	81	115	105	700	+
18.....	20	.000	.062	.46	.0120	2.1	80	110	80	650	+
19.....	21	.000	.052	.50	.0060	2.1	78	110	50	550	+
20.....	22	.000	.072	.46	.0060	1.9	76	115	35	325	+
21.....	22	.000	.060	.46	.0040	2.0	78	110	27	250	+
22.....	22	.000	.078	.36	.0040	2.0	77	120	37	240	-
23.....	22	.000	.078	.42	.0040	2.4	75	120	27	200	-
24.....	22	.000	.058	.36	.0030	2.3	75	115	23	110	-
25.....	21	.000	.058	.34	.0040	2.0	76	115	17	100	-
26.....	21	.000	.066	.34	.0040	2.2	78	110	12	130	-
27.....	22	.000	.062	.30	.0040	2.2	78	110	10	210	-
28.....	23	.000	.062	.30	.0040	2.2	79	105	10	150	-
29.....	22	.000	.067	.48	.0100	2.4	72	110	12	230	-
30.....	22	.000	.067	.48	.0100	2.4	72	110	80	720	7+
31.....	22	.000	.067	.48	.0100	2.4	72	110	80	720	7+
Average.....	22	.000	.067	.48	.0100	2.4	72	110	80	720	7+

TABLE 23—Continued.
Results of Daily Chemical and Bacterial Analyses of Ohio River Water at Louisville, Ky., for August, 1911.
 PARTS PER MILLION.

DAY.	Chlorine.	AMMONIA.		Nitrates.	Nitrites.	Oxygen Consumed.	Alkalinity.	Hardness.	Turbidity.	Bacteria Per C.C.	Coli.
		Free.	Albuminoid.								
1.	23	.000	.088	.25	.0040	2.1	80	110	20	225	+
2.	24	.000	.088	.28	.0040	1.9	84	115	20	325	+
3.	23	.000	.088	.36	.0050	1.9	87	115	20	250	+
4.	23	.000	.098	.28	.0040	1.8	88	115	18	200	+
5.	22	.000	.088	.24	.0040	1.9	89	125	12	300	+
6.	24	.000	.072	.32	.0050	2.0	95	130	10	190	—
7.	23	.000	.106	.34	.0060	2.1	99	130	9	150	—
8.	27	.012	.114	.42	.0060	1.8	100	135	10	200	—
9.	29	.034	.074	.38	.0070	2.3	104	135	10	140	—
10.	29	.030	.060	.42	.0070	2.0	102	145	10	190	—
11.	29	.012	.082	.32	.0080	2.0	98	140	18	210	+
12.	29	.028	.068	.38	.0090	1.8	99	135	12	325	—
13.	29	.027	.098	.20	.0110	2.4	95	135	10	240	—
14.	30	.032	.092	.28	.0120	2.2	101	135	15	550	—
15.	27	.024	.076	.32	.0140	2.3	100	135	18	400	—
16.	26	.024	.078	.30	.0180	2.5	100	130	20	600	—
17.	24	.018	.074	.30	.0180	2.2	106	130	20	375	+
18.	24	.024	.064	.28	.0140	2.3	108	130	20	550	—
19.	24	.024	.088	.25	.0080	2.4	103	130	18	750	—
20.	24	.024	.088	.25	.0080	2.4	108	140	15	375	—
21.	25	.050	.104	.23	.0090	2.6	113	135	20	375	—
22.	30	.048	.122	.25	.0090	2.3	108	120	20	550	—
23.	30	.014	.176	.23	.0130	2.5	115	135	20	450	—
24.	28	.019	.110	.23	.0090	2.4	113	140	15	475	—
25.	27	.015	.142	.27	.0090	2.5	111	140	15	350	—
26.	26	.010	.164	.25	.0080	2.2	110	140	15	550	—
27.	25	.008	.136	.21	.0170	2.5	103	135	15	1,350	—
28.	25	.009	.110	.22	.0140	2.7	99	125	18	750	—
29.	26	.009	.110	.22	.0140	2.5	94	135	18	1,400	—
30.	26	.009	.110	.22	.0140	2.5	94	135	18	1,400	—
31.	26	.009	.110	.22	.0140	2.5	94	135	18	1,400	—
Average.	26	.017	.097	.29	.0094	2.2	100	131	15	435	6+

TABLE 23—Continued.
Results of Daily Chemical and Bacterial Analyses of Ohio River Water at Louisville, Ky., for September, 1911.
 PARTS PER MILLION.

Day.	Chlorine.	AMMONIA.		Nitrates.	Nitrites.	Oxygen Consumed.	Alkalinity.	Hardness.	Turbidity.	Bacteria Per C.C.	Coli.
		Free.	Albuminoid.								
1.....	26	.008	.113	.35	.0090	2.6	93	125	20	600	—
2.....	24	.008	.089	.31	.0090	2.4	92	130	15	1,800	—
3.....							95		20	350	—
4.....	33	.010	.134	.32	.0070	2.6	91	140	80	900	—
5.....	34	.000	.226	.36	.0200	5.4	68	140	260	9,500	—
6.....	39	.000	.256	.40	.0080	5.0	53	120	330	8,900	—
7.....	46	.000	.200	.50	.0020	5.4	46	120	300	9,000	—
8.....	36	.000	.174	.50	.0020	4.2	46	115	270	9,200	—
9.....	22	.000	.162	.60	.0020	3.7	34	100	185	7,400	—
10.....							30		135	5,800	—
11.....	17	.000	.130	.60	.0020	4.1	29	80	150	7,000	—
12.....	16	.000	.092	.60	.0020	5.2	31	70	140	5,000	—
13.....	15	.000	.126	.45	.0030	4.6	37	70	170	5,200	—
14.....	13	.010	.296	.48	.0060	5.6	55	85	435	11,000	—
15.....	13	.000	.240	.50	.0020	7.2	57	95	425	14,000	—
16.....	17	.000	.268	.45	.0030	6.3	49	90	375	17,000	—
17.....							51		475	15,000	—
18.....	19	.000	.480	.64	.0020	10.6	62	95	625	20,500	—
19.....	16	.000	.324	.62	.0030	7.7	58	95	525	9,900	—
20.....	17	.010	.410	.66	.0020	6.8	55	90	625	6,300	—
21.....	13	.080	.800	.60	.0040	12.8	52	80	825	12,800	—
22.....	16	.008	.680	.68	.0030	10.4	43	75	775	13,000	—
23.....	14	.008	.600	.60	.0030	11.8	34	75	650	14,000	—
24.....							28		375	6,700	—
25.....	12	.008	.360	.56	.0040	6.3	30	60	325	5,400	—
26.....	12	.004	.420	.70	.0050	4.9	33	65	300	5,000	—
27.....	12	.008	.220	.60	.0050	5.8	36	70	275	3,900	—
28.....	12	.016	.280	.56	.0030	5.9	40	70	290	3,200	—
29.....	13	.020	.200	.66	.0060	5.5	40	70	225	5,000	—
30.....	13	.016	.140	.70	.0050	4.7	42	70	190	3,900	—
Average.....	20	.005	.285	.53	.0050	6.0	50	92	325	7,910	20+

THE RIVER AT LOUISVILLE, KENTUCKY.

The great amount of sewage and manufacturing waste entering the river at Louisville was noticeable, especially at the point of entrance of the different sewers. Special data shown in Table 24 was taken on both the Indiana and Kentucky shores.

At this point the current along the shores is very slow, and as the filth is not washed away as fast as it enters, the physical condition of the water was decidedly repulsive. At the time of our visit, fecal matter was visible along the shore of the river front on the Kentucky side. Oil and grease covered the water at the mouth of some of the sewers.

Beargrass Creek seemed to be boiling, due to septic action which was taking place so rapidly that the surface was one mass of bubbles. The sample taken there was thick with black suspended matter, and the stench arising at this point was almost unbearable. This odor was carried quite a distance when a slight wind was blowing and was especially noticeable in warm weather. A small channel beginning at the mouth of the creek and extending to the bridge at Campbell street, formed by Towhead Island and the Kentucky shore, was in but little better condition. The city dump was located along this channel near the bridge and, at times of heavy rains, all the washings from it went into the river.

The conditions here are bad, and if the proposed Ohio River intercepting sewer is built, it will do much toward relieving them, even though all the sewage and manufacturing waste does get to the river.

TABLE 24.
Miscellaneous Samples Collected at Louisville and Jeffersonville.

DATE.	Laboratory Number.	Sampling Point.	CHEMICAL.						BACTERIAL.		RIVER STAGE.		Remarks.		
			Chlorine.	Nitrates.	Nitrites.	Dissolved Oxygen.	Oxygen Consumed.	Alkalinity.	Turbidity.	Bacteria Per C.C.	Coli. Presumptive Test.	Putrescibility.		Cincinnati.	Evansville.
Aug. 16	139	Louisville shore...	10.0	.000	.0000	.000	3.50	36.0	Vy. dec.	2,700,000	-	+	11.9	2.4	Beargrass Creek at mouth.
Aug. 16	140	Louisville shore...	4.2	.000	.0000	.000	1.09	18.0	Dec.....	1,650,000	+	+	11.9	2.4	At end of Towhead Island under bridge between Island and Kentucky shore.
Aug. 16	141	Louisville shore...	13.6	.010	.0032	.000	6.03	34.0	Dec.....	4,000,000	+	+	11.9	2.4	Campbell St. Sewer.
Aug. 16	142	Louisville shore...	5.2	.006	.0032	.000	5.04	22.8	Vy. dec.	6,400,000	-	+	11.9	2.4	Preston St. Sewer.
Aug. 18	143	Louisville shore...	2.4	.005	.0007	.389	.55	10.4	Dec.....	1,800,000	+	+	12.0	2.5	Between 3rd and 4th Sts. Heavy rains. Sewer under water.
Aug. 18	144	Louisville shore...	2.6	.007	.0007	.468	.53	10.8	Dec.....	745,000	+	+	12.0	2.5	4th St. Heavy rains. Sewer under water.
Aug. 18	145	Louisville shore...	3.2	.005	.0007	.783	.58	16.0	Dec.....	850,000	-	+	12.0	2.5	5th St. Heavy rains. Sewer under water.
Aug. 18	146	Louisville shore...	2.4	.005	.0006	.422	.40	12.0	Dec.....	640,000	+	+	12.0	2.5	6th St. Heavy rains. Sample taken about 10 ft. from sewer.
Aug. 18	147	Louisville shore...	2.4	.005	.0007	.555	.55	10.0	Dec.....	260,000	+	+	12.0	2.5	8th St. Heavy rains. Sample taken near sewer.
Aug. 18	148	Louisville shore...	64.4	.003	.0008	.244	1.42	16.8	Dec.....	2,500,000	+	+	12.0	2.5	10th St. Heavy rains. Sample taken in sewer.
Aug. 18	149	Louisville shore...	3.4	.003	.0009	.465	.60	11.6	Dec.....	116,000	+	+	12.0	2.5	12th St. Heavy rains. Sample taken in sewer.
Aug. 22	160	Louisville shore...	2.6	.003	.0010	.821	.63	13.2	Dec.....	149,000	+	+	12.0	2.4	Mouth of canal.
Aug. 22	161	Louisville shore...	2.6	.008	.0009	.375	.43	14.0	Dec.....	17,000	+	+	12.0	2.4	In lock.
Aug. 22	163	Louisville shore...	2.4	.001	.0008	1.028	.38	11.6	Dec.....	31,000	+	-	12.0	2.4	Left channel of river under K. & L. bridge.
Aug. 21	156	Jeffersonville shore.	2.0	.007	.0024	.523	1.41	19.2	Slt.....	5,000	-	+	12.0	2.3	In mouth of sewer, Missouri Ave.
Aug. 21	157	Jeffersonville shore.	1.8	.005	.0012	.671	.19	11.2	Dec.....	1,000	+	+	12.0	2.3	Foot of Spring St.
Aug. 21	158	Jeffersonville shore.	1.8	.005	.0010	.783	.38	10.8	Dec.....	9,000	-	+	12.0	2.3	About 10 ft. from sewer, foot of Walnut St.
Aug. 21	159	Jeffersonville shore.	2.0	.003	.0002	.325	2.20	21.8	Slt.....	149,000	+	+	12.0	2.3	In sewer, foot of Graham St.

SEWAGE DISPOSAL BY DILUTION.

According to different authorities, the amount of water necessary to dispose of domestic sewage without creating a nuisance, varies from 3 to 7 cubic feet per second flow. Rudolph Hering concluded, from work done by the Massachusetts State Board of Health, that if the flow was less than $2\frac{1}{2}$ cubic feet per second per 1,000 persons, a nuisance was sure to arise. When the flow reached seven cubic feet per second per 1,000 persons, no offense would result.

TABLE 25.

From the Testimony of Rudolph Hering on Chicago Drainage Canal Litigation.

AMOUNT OF FLOWING WATER.		COMPOSITION OF SEWAGE, PARTS PER 100,000.				Remarks.
Cu. Ft. per Sec. per 1,000 Persons.	Gallons Per Capita per Day.	Ammonia.		Dissolved Solids.	Chlorin.	
		Free.	Albuminoid.			
.062	.040	4.50	.90	65.4	12.6	Dilution is offensive.
.077	.050	3.60	.72	52.3	10.1	Dilution is offensive.
.093	.060	3.00	.60	45.3	8.4	Dilution is offensive.
.108	.070	2.57	.52	37.4	7.2	Dilution is offensive.
.124	.080	2.25	.45	32.7	6.3	Dilution is offensive.
.140	.090	2.00	.40	29.1	5.6	Dilution is offensive.
.155	.100	1.80	.36	26.2	5.0	Dilution is offensive.
.186	.120	1.50	.30	21.8	4.2	Dilution is offensive.
.232	.150	1.20	.24	17.4	3.4	Dilution is offensive.
.310	.200	.90	.18	13.1	2.5	Dilution is offensive.
.388	.250	.72	.14	10.5	2.0	Dilution is offensive.
.465	.300	.60	.12	8.7	1.7	Dilution is offensive.
.5	.323	.5580	.114	8.10	1.56	Dilution is offensive.
1.0	.646	.2790	.0557	4.05	.78	Dilution is offensive.
1.5	.969	.1860	.0371	2.70	.52	Dilution is offensive.
2.0	1.292	.1395	.0278	2.02	.39	Dilution is offensive.
2.5	1.615	.1116	.0223	1.62	.31	
3.0	1.938	.0930	.0186	1.35	.26	
4.0	2.584	.0697	.0139	1.01	.19	
5.0	3.230	.0558	.0111	.81	.16	
6.0	3.876	.0465	.0093	.67	.13	
7.0	5.522	.0399	.0080	.58	.11	
8.0	5.168	.0349	.0070	.51	.10	Dilution is not offensive.
9.0	5.814	.0310	.0062	.45	.09	Dilution is not offensive.
10.0	9.463	.0279	.0056	.40	.08	Dilution is not offensive.
15.0	9.694	.0186	.0037	.27	.05	Dilution is not offensive.
20.0	12.926	.0139	.0028	.20	.04	Dilution is not offensive.
30.0	19.389	.0093	.0019	.13	.03	Dilution is not offensive.
40.0	25.852	.0070	.0014	.10	.02	Dilution is not offensive.
50.0	32.315	.0056	.0011	.08	.02	Dilution is not offensive.
100.0	64.630	.0028	.0006	.04	.01	Dilution is not offensive.

Mr. Goodnaugh, in a report to the committee on the Charles River Dam, 1903, states, "Omitting reference to objections caused by the manner of discharge of sewage and objections which may be due to various other circumstances, and considering only the question as to whether objectional conditions exist in the various streams into which sewage is discharged by reason of the quantity of sewage discharged, an examination of all the information available from the investigations that have been made, shows that where the flow

of a stream exceeds six cubic feet per second per 1,000 persons discharging sewage, objectional conditions are unlikely to result."

The Chicago Sanitary District Act of 1889 required a flow of at least 3.3 cubic feet per second for every 1,000 people sewerage into the canal, and the canal was designed on this basis. It was found by the United States Supreme Court, after extensive litigation, that this would produce no nuisance, and in fact no nuisance was alleged by the Missouri complainants except in so far as related to bacterial conditions, which can readily be taken care of by sterilization at a small cost through the use of hypochlorite of lime. Since that time sterilization by hypochlorite of lime has come into general use, and the bacterial condition can be remedied at a low cost.

TABLE 26.

Lowest Stages of Ohio River at Cincinnati, 1860-1909, Inclusive.

CALENDAR YEAR.	Date.	Stage. (Feet.)	Calendar Year.	Date.	Stage. (Feet.)
1860	Oct. 3	5.3	1886	Nov. 1	3.3
1861	July 13	5.1	1887	Sept. 23	2.7
1862	Oct. 31	2.3	1888	Aug. 7	5.3
1863	Oct. 6	2.5	1889	Sept. 13	5.7
1864	Aug. 6	3.1	1890	Aug. 30	5.8
1865	Oct. 19	5.7	1891	Oct. 7	4.4
1866	Aug. 17	4.8	1892	Nov. 5	3.4
1867	Oct. 19	3.0	1893	Aug. 30	3.6
1868	July 21	5.1	1894	Sept. 14	3.1
1869	Aug. 21	5.3	1895	Oct. 28	2.3
1870	Oct. 4	3.8	1896	Sept. 25	5.5
1871	Oct. 12	2.7	1897	Oct. 18, 25, 26, 27	3.1
1872	Oct. 14	3.0	1898	Sept. 27	5.0
1873	Oct. 12	3.7	1899	Nov. 2	3.4
1874	Sept. 22	2.4	1900	Oct. 21	3.1
1875	Sept. 19	4.3	1901	Nov. 11, 12, 13, 15, 16, 17, 18, 19, 20	4.2
1876	Sept. 4	6.2	1902	Sept. 25	3.9
1877	Oct. 9	3.3	1903	Oct. 6, Nov. 11, 12, 13, 14, 15, 16	4.5
1878	Oct. 24	4.3	1904	Oct. 6, 7	3.3
1879	Oct. 23	2.5	1905	Oct. 11	6.5
1880	Oct. 28	3.8	1906	Sept. 22	7.1
1881	Sept. 18	1.9	1907	Oct. —	7.0
1882	Nov. 1	6.1	1908	Oct. —	2.8
1883	Sept. 21	3.6	1909	Oct. —	3.6
1884	Sept. 21	2.8			
1885	Sept. 26	2.5			

Average, 4.0 feet.

Table 26 shows the lowest stages of the Ohio River at Cincinnati from 1860 to 1909, inclusive. They are of interest in connection with the dilution of sewage because offensive conditions will arise when the stage is the lowest. The minimum annual stages were compiled from report of the U. S. Army Engineers and from those of the U. S. Weather Bureau by Kimberley and were furnished for this report by Mr. Paul Hansen, late of the Kentucky State Board of Health and now Engineer of the Illinois Water Survey.

During the period of fifty years, the lowest recorded stage at

Cincinnati was 1.9 feet, which was reached on September 18, 1881. The average minimum stage for the above period is 4.0 feet. A gauge height of three feet or less has only been observed in thirteen of the fifty years, and in the last twenty-three years, but three times. The lowest stage observed since 1881 is 2.3 feet.

A number of discharge measurements have been made by the United States Army Engineers. Discharge rating tables have been compiled by the United States Geological Survey for the Ohio River at Cincinnati, Ohio, Louisville, Kentucky, and Evansville, Indiana, but they are not in print, and permission to use discharges based on them could not be obtained.

During the low water period in the fall of 1892, the Army Engineers made a series of discharge measurements on the Ohio River at different points. Three measurements were made below the mouth of the Kentucky River and are given in Table 27.

TABLE 27.
Ohio River Discharge Measurements, 1892.

DATE.	Point of Observation Below.	Distance from Pittsburg, Miles.	Gage Reading Above Low Water.	Average Velocity, Feet per Second.	Discharge, Cubic Feet per Second.	Gage Reading at Cincinnati.
Nov. 1.	Kentucky River	541¼	1.20	0.55	6894	3.6
Nov. 2.	Kentucky River	541¼	1.20	0.61	7626	3.6
Nov. 2.	Kentucky River	541¼	1.30	0.63	7979	3.6

The most recent low water discharge measurements at Cincinnati were made at Fernbank dam on December 1, 1908. At this time the channel of the river was contracted by two coffer dams and conditions were well adapted for a discharge measurement. The velocity, measured by surface floats, averaged 3.3 feet per second; the mean cross-section was 2,306 square feet, and the discharge was 7,610 cubic feet per second, or about 4,900,000 gallons in twenty-four hours. The stage at Cincinnati on December 1, 1908, was 4.3 feet. On September 17, 1908, the discharge of the Ohio River at Henderson, Kentucky, was 14,500 cubic feet per second, with a gauge reading of 3.06 feet at that point.

Taking the figures used by the Sanitary District of Chicago, 3.3 cubic feet per second for every 1,000 people sewerage in, we find that the discharge of 7,610 cubic feet per second when the river stage is 4.3 feet at Cincinnati will care for the sewage of 2,303,000 people. While the average stage is four feet, the river has gone as low as 1.9 feet, but this has only happened once in fifty years. Although no figures have been obtained from this extreme low stage,

yet it is doubtful if, under present conditions, offenses would arise. Cincinnati, with its present population of about half a million, would require a flow of 1,650 cubic feet per second, and it can be reasonably assumed that this low flow will seldom be reached. Even at the lowest stage reached, 1.9 feet, the flow would properly take care of the sewage of a much larger population than is found at Cincinnati at the present time.

On this survey, positive tests for putrescibility were not obtained on any samples collected in the river channel. A few positive tests were made on samples collected along the shore at Louisville, but these samples were collected at or near the mouth of sewers.

Investigations have shown that the dissolved oxygen in the water should not be less than .25 parts per hundred thousand in order that fish life may be maintained. Samples collected in the river channel on but a few occasions showed less than .6 parts per hundred thousand of dissolved oxygen.

THE EFFECT OF DAMS UPON THE QUALITY OF THE WATER.

The Federal Government has planned a series of dams along the Ohio River for the purpose of maintaining a nine-foot stage of water. One of these dams has been built, Fernbank dam, located about twelve miles below Cincinnati. Two more are to be started, one near Evansville, Indiana, and the other just above Rising Sun, Indiana.

It was feared by many people at Cincinnati that the water supply of that city would be affected by the Fernbank dam. The intake is about twenty-five miles up the river from the dam.

Mr. J. W. Ellms, Superintendent of Filtration at Cincinnati, in anticipation of such an agitation being started, made a sanitary survey of the river from the intake to the dam in 1910, before the dam was in service, and again in 1911, after it was being used. A full report of the work, together with recommendations with respect to the question as a local one, has been submitted to the city officials and it is hoped that this valuable report will be printed for distribution to those interested in similar work.

By permission, as has been previously acknowledged, Tables 28 and 29 are here included, chiefly for the purpose of giving the analysis of the river water along the Cincinnati water front as a

continuation of our data and for allowing a comparison of this data in connection with other proposed dams along the Indiana boundary. The key of sampling points is here given.

KEY OF SAMPLING POINTS.

Work Done by the Cincinnati Water Department Along the Ohio River, from the Water Works Intake to the Fernbank Dam.

Sample Number.	Description of Sampling Point.
1	About 300 feet above Fernbank Dam.
2	About 6,000 feet above Fernbank Dam and opposite Delphi.
3	About 5,000 feet above Station 2 and opposite U. S. Government Light on Kentucky shore.
4	About 10,400 feet above Station 3 and opposite St. Joseph Academy on the Ohio shore.
5	About 5,200 feet above Station 4 and about 1,300 feet below Anderson's Ferry.
6	About 4,800 feet above Station 5 and opposite Garbage Disposal Plant.
7	About 5,200 feet above Station 6 and opposite U. S. Government Light on the Kentucky shore.
8	About 7,700 feet above Station 7 and about 1,000 feet below Fleishmann's Distillery and about 4,000 feet above Cullom's Riffle.
9	About 5,600 feet above Station 8 and opposite Lagoon Park, Ludlow.
10	About 2,600 feet above Station 9 and opposite Old Mt. Hope Pumping Station of the Cincinnati Water Works.
11	About 2,600 feet above Station 10 and opposite B. & O. S. W. R. R. Company's Round House. About 1,000 feet below the mouth of Mill Creek and 1,600 feet below Cincinnati S. R. R. bridge.
12	About 2,600 feet above Station 11 and 1,000 feet above Cincinnati S. R. R. bridge.
13	About 5,000 feet above Station 12 and 1,000 feet below C. & O. R. R. bridge.
14	About 2,600 feet above Station 13 and midway between Covington and Cincinnati highway bridge (suspension) and the C. & O. R. R. bridge.
15	About 2,600 feet above Station 14 and opposite mouth of Licking River on the Kentucky shore and the public landing at the foot of Broadway on the Ohio shore. About 1,000 feet below Newport and Cincinnati highway bridge.
16	About 2,600 feet above Station 15 and 200 feet above Newport and Cincinnati highway bridge (L. & N. bridge). 600 feet below mouth of Eggleston Ave. sewer and the Miami & Erie Canal spillway. 1,300 feet below old Front St. water works pumping station.
17	About 2,600 feet above Station 16 and opposite Taylor's Run in Taylor's bottom on Kentucky side.
18	About 2,600 feet above Station 17, opposite Bellevue on Kentucky shore and Eden Park pumping station on Ohio shore.
19	About 10,400 feet above Station 18 and about 400 feet below the Cincinnati East End Gas Works on the Ohio side.
20	About 4,200 feet above Station 19, opposite Crawfish Creek sewer at Delta Ave., Cincinnati.
21	About 5,200 feet above Station 20, at lower of Coalhaven Harbor.
22	About 5,200 feet above Station 21 and opposite mouth of Little Miami River.
23	About 2,600 feet above Station 23 and 600 feet above Newport water works pumping station on the Kentucky shore.
24	About 3,700 feet above Station 23 at the Cincinnati water works intake.

TABLE 28.

OHIO RIVER SAMPLES AT CINCINNATI, OHIO.

Average Results in 1910 of Samples Collected from Sampling Stations in Channel of Ohio River when the Stage was Less than Five Feet.

PARTS PER MILLION.

SAMPLING POINT.	Chlorine.	AMMONIA.		Nitrates.	Nitrites.	Oxygen Consumed.	Bacteria per C.C.
		Free.	Albuminoid.				
1.....	27.4	.098	.225	.04	.0059	3.4	76,600
2.....	26.0	.111	.289	.03	.0055	3.2	64,700
3.....	25.1	.088	.231	.04	.0046	3.5	56,170
4.....	24.6	.077	.215	.03	.0045	3.3	47,600
5.....	24.5	.092	.216	.04	.0058	3.2	38,400
6.....	23.9	.071	.172	.04	.0039	2.9	44,250
7.....	23.7	.069	.176	.04	.0037	3.1	22,100
8.....	23.3	.047	.190	.04	.0031	3.0	34,700
9.....	24.7	.094	.248	.04	.0042	3.4	110,400
10.....	24.3	.086	.246	.04	.0040	3.4	127,200
11.....	22.6	.009	.143	.03	.0026	2.7	8,160
12.....	21.6	.021	.160	.03	.0025	2.7	9,240
13.....	22.6	.018	.174	.04	.0033	3.2	14,660
14.....	22.3	.012	.144	.04	.0028	2.8	4,780
15.....	22.3	.033	.189	.03	.0028	3.1	8,880
16.....	21.9	.004	.136	.03	.0026	2.7	2,800
17.....	21.7	.006	.128	.02	.0035	2.6	590
18.....	21.7	.005	.144	.03	.0028	2.5	460
19.....	21.6	.004	.140	.03	.0025	2.6	308
20.....	21.5	.008	.132	.04	.0033	2.6	168
21.....	22.3	.008	.122	.03	.0028	2.6	224
22.....	22.1	.018	.146	.03	.0022	2.5	246
23.....	21.6	.007	.145	.03	.0020	2.6	173
24.....	22.1	.005	.126	.04	.0019	2.5	216

Average Per Cent. of Positive Coli Results in 1910, Obtained from Samples Collected in Channel of Ohio River when the Stage was Less than Five Feet.

SAMPLING STATIONS BY GROUPS.	IN 1 C.C.		IN .1 C.C.	
	Number of Samples.	Per Cent Positive.	Number of Samples.	Per Cent Positive.
1-6.....	6	100	12	100
7-11.....	9	100	14	100
12-16.....	10	100	12	92
17-22.....	11	82	14	29
23-24.....	4	75	5	0

TABLE 29.

OHIO RIVER SAMPLES AT CINCINNATI, OHIO.

Average Results in 1911 of Samples Collected from Sampling Stations in Channel of Ohio River when Dam was in Service and the Estimated Stage Less than Five Feet.

PARTS PER MILLION.

SAMPLING POINT.	Chlorine.	AMMONIA.		Nitrates.	Nitrites.	Oxygen Consumed.	Dissolved Oxygen.	Bacteria per C.C.
		Free.	Albuminoid.					
1.....	32.4	.137	.173	.14	.0086	2.8	5.45	6,690
2.....	31.7	.134	.176	.15	.0088	2.8	.....	5,380
3.....	31.3	.143	.183	.15	.0091	2.8	.....	10,850
4.....	30.6	.131	.173	.14	.0088	2.8	.....	19,600
5.....	30.6	.120	.262	.13	.0093	3.3	.....	68,250
6.....	30.7	.122	.211	.15	.0083	3.1	.....	38,100
7.....	30.4	.092	.185	.15	.0065	2.7	.....	20,400
8.....	30.4	.087	.251	.14	.0069	3.1	.....	60,300
9.....	30.0	.098	.211	.19	.0067	3.1	.....	62,100
10.....	29.4	.067	.210	.18	.0069	2.9	7.66	45,500
11.....	28.9	.043	.165	.18	.0056	2.9	.....	40,700
12.....	28.9	.063	.155	.17	.0050	2.6	7.62	7,170
13.....	28.7	.031	.162	.18	.0059	2.6	.....	13,200
14.....	29.0	.025	.167	.18	.0062	2.8	.....	32,600
15.....	29.3	.059	.240	.18	.0081	3.3	7.89	54,700
16.....	29.1	.041	.206	.20	.0077	3.0	.....	17,840
17.....	28.9	.020	.139	.18	.0046	2.4	.....	1,320
18.....	28.9	.023	.151	.16	.0048	2.5	.....	682
19.....	28.9	.016	.139	.17	.0043	2.4	.....	530
20.....	29.0	.011	.133	.17	.0043	2.4	.....	204
21.....	29.0	.015	.136	.16	.0044	2.4	.....	256
22.....	28.4	.013	.142	.17	.0042	2.5	8.57	240
23.....	29.3	.014	.135	.16	.0041	2.3	.....	187
24.....	29.4	.018	.141	.17	.0041	2.4	.....	520

Average Per Cent. of Positive Coli Results in 1911, Obtained from Samples Collected in Channel of Ohio River when Dam was in Service and Estimated Stage Less than Five Feet.

SAMPLING STATIONS BY GROUPS.	IN 1 C.C.		IN .1 C.C.	
	Number of Samples.	Per Cent. Positive.	Number of Samples.	Per Cent. Positive.
1-6.....	.....	.....	18	83
7-11.....	.....	.....	2	50
12-16.....	1	100	25	68
17-22.....	28	36	42	36
23-24.....	13	46	14	14

The stages in Table 28 were actual gauge readings, and those in Table 29 were estimated from gauge readings at points unaffected by the pool stage of the dam.

Excellent curves showing the chemical and bacterial analyses have been prepared by Mr. Ellms, both before and after the dam was in service. The dam made a large sedimentation basin, which in itself assisted purification.

Mr. Ellms states that "during periods when the Fernbank dam was not in service, little evidence of self-purification of the stream

was apparent, even as far down as Lawrenceburg, Indiana, which is about ten miles below the dam and twenty miles below Mill Creek, the point of maximum pollution.

"Evidences of self-purification of the stream were most marked while the Fernbank dam was in service or at those periods when the velocity of the current was the least and the effects of sedimentation most pronounced.

"The greater concentration of sewage at low stages of the river is counteracted by sedimentation effects in the pools, or in other words, self-purification is most active. On the other hand, at the higher stage of the river, the greater dilution of the presumably fairly constant volume of sewage entering the river is more than offset by the agitation produced by the greater velocity of the current, and by a more polluted water coming down the stream."

The dam will not affect Cincinnati water supply, and in case there was any danger of its doing so, the consumer is protected by a thorough treatment by coagulation, sedimentation and filtration.

GENERAL CONCLUSIONS.

The importance of the Ohio River as a source of water supply for cities along the river and also as a means of disposing of the domestic sewage and manufactural wastes, is just beginning to be recognized. The two problems, water supply and sewage disposal, are closely related. The same body of water serves both to supply a large population with water for drinking and domestic purposes and to dilute sewage and wastes so as to render them innocuous.

Many cities and towns are located on the Ohio River, and the problem is one which concerns them all. If a stream, the flow of which was confined to one State, was affected, the question of water supply and sewage disposal would be much less complicated than is the case with the Ohio River. The protection from pollution of the Ohio River, draining such a large territory and flowing through and bordering so many States, is not a problem to be solved by the action of a few cities and towns, nor is it, indeed, one for any single State. If the Ohio River is to be improved and its former condition restored, the States will have to act jointly in the matter, and even then the aid of the Federal Government may have to be enlisted.

It has been shown that, in its raw state, the river water is contaminated and unfit for drinking purposes at any point along the survey. Both the analyses and the typhoid data confirms this con-

elusion, and the river water should not be used, as is now the case at several cities, without purification. It can only be made safe by filtration and chemical treatment.

As a further confirmation of these statements, James H. Fierstein in "Water and Public Health" published in 1905, said: "The amount of bacterial self-purification that takes place in large sewage pollution rivers, as indicated by the typhoid fever death rates of cities using their waters, is insignificant. Rivers that have received relatively small amounts of pollution sometimes show so little improvement in quality, even after many miles of flow, with the attendant dilution and dispersion, as to indicate great latent danger in their use."

Mr. Ellms, in his report on the pollution of the Ohio River at Cincinnati, Ohio, said: "As a drinking water supply, the Ohio River water is unsafe without purification at any point from which samples were collected in the fifty or more miles of river examined."

While most of the cities have their water supply intakes above the city proper, yet one instance was met with where it was drawn from below the city.

Co-operation of cities and towns is needed where the question of the sewage of one city and its effects upon the water supply of cities below it are to be considered. Thus far, each locality has selfishly considered its own interests without thought of health and welfare of other communities.

Several large cities could well undertake a partial treatment of their sewage. As shown by the data, there are two cities on the survey where such treatment might be considered, Cincinnati, Ohio, and Louisville, Kentucky. Great quantities of wastes are discharged into the river at these points, but up to the present time no serious conditions have existed. Mr. Ellms said, "At no time during the investigation were there evidences of putrescent conditions in the Ohio River itself, although the discharge from Mill Creek was at times little better than septicized sewage." The conditions of the river front at Louisville were bad, and the same statement could be made both of it and of Beargrass Creek at its point of entry into the river.

Whatever method is employed, it would be an expensive proposition to treat the sewage before discharging it into the river, and at the present time it is not necessary, as at no point was a nuisance found to exist in the river proper, even at the lowest stages. At the two places mentioned, a fine screening of the sewage would be

highly beneficial. While this would not render the raw water at points below the two cities fit for drinking purposes, yet it would materially improve the physical condition of the Ohio and, to that extent, prevent any serious conditions arising in the near future.

In reaching conclusions relative to the pollution of the Ohio River, it should be remembered that river traffic has been on the decline for the last few years, and that, in several of the smaller cities and towns, the population has decreased. This is not true of the larger cities, such as Cincinnati, Ohio, Louisville, Kentucky, and Evansville, Indiana, where the railroad facilities are very good, as these cities have rapidly increased in population.

As an Indiana problem alone, future investigations could be limited to either of the two cities or to Evansville. The question of the disposal of manufacturing wastes is a comparatively easy one for Indiana manufacturers. It is an individual problem for each concern to solve, but there are very few where a treatment of the wastes is required, and then only after the problem has been taken up at all points along the river.

RECOMMENDATIONS.

The pollution of interstate waters will at no distant date be given serious consideration by the Federal Government. One of the large problems and possibly the most important investigation will be that of the pollution of the Ohio River. The magnitude of its drainage basin and its great population, the importance of the cities situated along its banks, and its utilization as a water supply, will ultimately make it necessary to regulate the practice now followed of utilizing it for sewage disposal.

As is shown by this investigation, the State of Indiana will be little affected by any regulations the Federal Government may impose, but in order that the cities and towns situated on the Ohio may be prepared to handle their sewage wastes in whatever manner the Federal Government may require, all future installations should be made so that sewage disposal plants may be constructed without important changes in sewer systems. All cities and towns contemplating the installation of sewage systems or important additions to those already in use, should so design them that all sewage will be conveyed to one point.

The study of the purity of the water of the Ohio River demonstrates its unfitness for drinking and domestic purposes without purification, and to meet this necessity the cities of Vevay, Madi-

son, New Albany, Cannelton and Newburg should take steps to purify their water supply. In most instances the most practical plan is the method of coagulation and filtration, supplemented in specific instances by chemical treatment for further bacterial purification.

The city of Mount Vernon, although supplied with water treated in a well-managed filtration plant, does not at times secure a satisfactory bacterial reduction. To avoid the ill effects sure to follow the use of an impure water supply, the installation of a hypochlorite of lime treating plant or such other system of sterilization as will effectively destroy the bacterial content of the water, is urgently needed.

APPENDIX.

STATE INSTITUTIONS.

CRAGMONT ASYLUM.

Madison.

Cragmont Asylum is located on the high bluffs overlooking the Ohio River, just west of Madison. It is a new institution and is modern in every respect.

In August of 1911 there were 725 people on the grounds. The total capacity, including the inmates and attendants, is 1,200, and it is expected that this population will be reached in 1912.

The water supply is taken from five 8-inch wells, 175 feet deep, located at the foot of the bluffs and along the river bank. The average daily consumption is 300,000 gallons, and this supply is pumped from the wells to a reservoir of 688,000 gallons capacity, from which point it is distributed by gravity.

An analysis of the water showed it to be entirely free from pollution and suitable for drinking and domestic purposes. A softening plant could be installed to good advantage.

All the sewage of the institution is discharged into the Ohio River without treatment, but the system was so designed that a purification plant can be added if required. Since the opening of the hospital in August, 1910, to August, 1911, there has been but one case of typhoid fever, and this patient brought it in.

REFORMATORY.

Jeffersonville, Indiana.

The State Reformatory at Jeffersonville had, including the attendants, a population of 1,180 people in August, 1911. It has an efficient sewerage system on the combined plan, with a total length of three miles, one mile of which is outside the Reformatory proper. It discharges into the Ohio River.

In 1908, the institution was visited with the most disastrous epidemic of typhoid fever in its history. Beginning with four cases of typhoid fever during the first ten days of November, the hospital records show a daily admittance, with the exception of one week, of from one to four cases until the first of January, when the epidemic practically subsided. Altogether, there were seventy-

nine cases and seven deaths from typhoid fever in 1908. The following year there was but one case. In 1910 there were five cases and no deaths.

Frequent analyses made by the State Chemist, of samples of water taken from the institution wells, from the city supply pipe at the institution and from the Ohio River near the intake of the Jeffersonville Water Company, proved conclusively that the water supply was the source of infection.

At the time of the epidemic in the institution, Jeffersonville was also undergoing a similar one, a further proof that the river water supply was at fault. At the present time the water system is an efficient one, but the quality of water from more recent analyses is shown to be of doubtful purity.

The following investigation was made August 19, 1911:

SOURCE OF WATER SUPPLY.

Well No. 1.—It is located inside the grounds near the office building and is forty-three feet deep, going down through the gravel to the limestone. The water usually stands six feet deep, but it goes down to three feet when being pumped.

The nearest sewer is one hundred feet from the well, where there is a concrete basin in which all the night soil is emptied. All the pipes and connections are in good shape and there is no chance for pollution from this source. All the previous samples examined before this date have been good. The well supplies four hundred gallons per minute.

Well No. 2.—This well is located about two hundred feet from Well No. 1 and on either side of it there is a sewer at a distance of one hundred and fifty feet. It is forty-eight feet deep and goes down to limestone.

Samples taken from this well have been found to be polluted. When these reports were obtained, the well was cleaned out, relined and whitewashed, then boiled with steam for about a week. Samples were then taken and sent in for analysis and still the pollution existed. Since then it has been held in reserve for fire purposes. It supplies two hundred gallons a minute.

Well No. 3.—It is about three hundred feet from No. 2 and five hundred feet from No. 1. It also goes down to limestone, which is forty-one feet below the surface at this point. This well was dug about two and one-half years ago, walled up, cleaned and whitewashed and a sample sent in for analysis. The water was pro-

nounced polluted and the well abandoned and partially filled up. About a year ago the filled part was removed, the walls again cleaned and whitewashed and it was then boiled for a week. A second boiling was given it before samples were taken, but the analysis showed the pollution still remained.

About thirty years ago an old tannery stood on the site of the well, and in some of the excavating, old vats were uncovered about ten feet from the well.

The well supplies two hundred gallons a minute and is being held in reserve for fire purposes.

Seven Wells in the Pasture.—A one and one-fourth-inch well was sunk in the pasture to supply the cows. So much water was found that three 2-inch and three 4-inch wells were sunk twenty-eight feet to rock.

The first strata drilled was blue clay, then a fine white sand, then gravel to rock. The water is found eight feet below the surface. The wells are in a ravine or hollow, the same one that the Jeffersonville Water Works is on and about three-fourths of a mile from it.

The nearest house is three hundred feet away and the total population on the ridge and the hollow is estimated at two hundred. It is about one-half mile back from Jeffersonville and Clarks-ville. These wells and those of the Jeffersonville Water Works seem to draw their water from the same vein.

The first sample showed about the same content, with the pasture well a little harder. It was pronounced good for drinking purposes. A second sample was taken some time later and reported as polluted. There were six cows in the pasture and it was thought that this fact might account for the pollution, so a fence was built and at present they cannot get within two hundred feet of the wells.

One sample for analysis was taken from a pump within thirty feet of the farthest well, as at that time there was no way of getting at the wells proper.

On August 25th four more samples were taken, one from each well in the grounds and a composite sample from the pasture well.

The analyses show the pollution of the water from some source. This may be due to some of the sewage from Jeffersonville reaching the water-bearing strata from which the wells draw their supply. The typhoid epidemic at both places occurring about the same time tends to bear out this hypothesis.

All the grounds are well sewered and all barns and closets are connected so that any danger from pollution from this source is slight. The nearest house outside the walls is two hundred feet away.

SOUTHERN INDIANA HOSPITAL FOR THE INSANE.

Woodmere Asylum, Evansville, Ind.

Woodmere Asylum, located near Evansville, Indiana, has a total population of 916 people. This includes the inmates and attendants.

All the sewage is treated before being discharged into a small creek. The chemical treating plant was installed in 1898, but the cost of chemicals and operation was so high that in 1906 the plant was rebuilt and changed to the bacterial type. The old concrete tanks were extended and doubled in capacity and now serve as sedimentation basins. Contact filters, of broken stone, receive the sewage after settling, and from them it passes intermittently to six slow sand filters with a rate of about 200,000 gallons per acre daily.

The following analyses, Table 30, show the character of the sewage at different stages of the treatment. Although improved materially, it had a strong odor. The high nitrate content of the effluent going to the creek is evidence that a large part of the organic matter has been mineralized, although this stage is not reached by a considerable portion which remains as ammonias and nitrites.

The water is now taken from two 6-inch driven wells, fifty-five feet in depth, which have been in use but a couple of years. Four old wells, fifty-five feet in depth, are held in reserve.

TABLE 30.
Analyses of Sewage at the Southern Indiana Hospital for the Insane at Evansville, Before and After Treatment. Analyzed in the Laboratory at Indianapolis.
 PARTS PER 100,000.

Laboratory Number.	Date of Collection.	Chlorine.	AMMONIA.		NITROGEN AS		Oxygen Consumed.	Hardness.	Solids.		Odor.	Color.	Turbidity.	Sediment.	Iron.	Remarks.
			Free.	Albuminoid.	Nitrates.	Nitrites.			Total.	Fixed.						
1788	June 6-08	16.0	4.340	.3000	.0000	.0004	2.795	46.0	91.6	85.0	Vy. strong	12	Much	Much	0.0	Raw sewage.
1789	June 6-08	16.0	3.150	.4000	.0000	.0004	1.070	45.6	85.4	70.8	Vy. strong	12	Much	Slight	0.0	Effluent from septic tank.
1790	June 6-08	16.0	3.850	.3800	.0000	.0004	.930	40.8	83.8	66.2	Strong	10	Much	Slight	0.0	Siphon chamber.
1791	June 6-08	16.0	2.650	.1600	.3000	.0140	.645	40.0	78.2	64.2	Strong	8	None	None	0.0	Final effluent.

Electric driven pumps force the water to the softening plant, from which point it flows by gravity to suction cisterns. Steam pumps lift the water from the cistern to a steel reservoir of 100,000 gallons capacity. No record is kept of the daily pumpage, which is estimated at 250,000 gallons.

During 1910 and 1911 there were no deaths from typhoid fever. The analysis of a sample, taken from a tap in the dining-room, showed a very satisfactory water for drinking and domestic purposes.

CITIES AND TOWNS.

CINCINNATI, OHIO.

The city of Cincinnati has a population estimated at 363,591 and is distant from Pittsburgh, 466.5 miles. Mill Creek and Duck Creek enter the Ohio River within the city limits. The former drains a large, thickly populated area, so that the actual population more or less directly sewered into the Ohio River at Cincinnati is considerable. In the latter part of 1907 the largest mechanical water filtration plant in the world, using the Ohio River as a source of supply, was completed and placed in operation at Cincinnati. The city had at the end of 1910 some 501 miles of improved streets in a total area of 50.50 square miles. It has an extensive system of sanitary combined and storm water sewers, public buildings, parks and many other improvements found in all prosperous modern cities.

Water Works.

The water works of Cincinnati were originally installed in 1820 and were operated by a private company. These works were purchased by the city in 1839. They comprised a pumphouse, two pumping engines, a reservoir, 19 miles of wooden pipe and three and one-half miles of iron pipe. The supply was taken directly from the Ohio River. The rapid growth of the city, especially along the river banks, gradually caused a district for a distance of over four miles above the water works intake to be very densely populated, thus causing a considerable pollution of the water supply. Because of this fact, and further because of the unsatisfactory quality of the raw Ohio River water from a physical viewpoint, beginning in 1890, investigations were inaugurated looking to obtain a better and a larger water supply. The problem was studied by an engineering commission, appointed in 1896, and later by a second commission that made exhaustive experimental studies, reported by George W. Fuller in 1898. The outcome of these investigations was the present mechanical filter plant.

The present water purification works are located at California, about eight miles above the center of the city; this site is practically above local pollution from the densely populated districts in Ohio and Kentucky. The plant comprises an intake near the mid-

dle of the Ohio River, a low service pumping station, two large settling basins, a filter house, containing also necessary coagulating apparatus for handling the chemicals, a clear well discharging into a brick tunnel leading to the high service pumping station, and a distributing reservoir of the old system. Only the distributing system, including the Eden Park reservoir, has been continued in use.

A full description of the Cincinnati water works appears in the extensive report of the Chief Engineer to the Board of Trustees and also in a special report of the Ohio State Board of Health, on Water and Sewage Purification, 1908. To these reports reference may be made for complete details. Suffice it here to record that the plant is equipped with four pumps of 30,000,000 gallons capacity, two storage reservoirs or settling basins, covering about forty-five acres and of 185,000,000 and 203,000,000 gallons respectively, an available total capacity of 330,000,000 gallons, a storage of 2.9 days under a full capacity of 112,000,000 gallons or 7.1 days under the present consumption of about 46,480,499 gallons in twenty-four hours, three coagulating basins of a combined capacity of 12,000,000 gallons, a coagulating system for the application of the chemicals, lime and sulphate of iron, twenty-eight concrete mechanical filters, each of 4,000,000 gallons capacity, a washing system with provisions for the application of wash water at a high rate without the use of compressed air, an uncovered clear well with an area of 160,000 square feet and of about 19,000,000 gallons capacity, a tunnel 22,264 feet long and seven feet in diameter, leading from the filter plant to the high pressure pumping station where there are three pumping engines each of 25,000,000 gallons capacity, and Eden Park reservoir with an available storage of 100,000,000 gallons.

In the annual report of the City Water Department, for the year 1910, it is stated that the average daily consumption is 46,480,499 gallons, which is supplied to a population of 363,591. The average per capita consumption is 127.8 gallons. The total miles of water pipe at the end of the year 1910 was 555.7. The range of pressure in the city mains is from thirty to one hundred and seventy-five pounds per square inch.

Sewerage.

The sewers of Cincinnati have been constructed on the separate system, as combined sewers and as storm sewers. Information contained in the report of the engineering department for the year 1910,

supplemented by data obtained through the courtesy of the chief engineer, is to the effect that on December 31, 1911, there were in the city of Cincinnati a total length of sewers of about 350.33 miles. Including the population directly accessible to the sewers and employed in the well-sewered business district of the city, it is reasonable to assume that a population of 200,000 to 250,000 is directly connected to the sewers. This figure is exclusive of the considerable population located on Mill Creek.

The Cincinnati sewers empty directly into the Ohio River at thirty-eight points along the water front, all some distance below the present water works intake, twenty-six outlets into Mill Creek and six into Duck Creek. It is of interest to consider the tremendous growth of the city and the increasing pollution of the Ohio River, as suggested by interesting data regarding the rate of extension of the Cincinnati sewerage system. These suggestive figures, occurring in the report of the engineering department for 1910 state that on February 18, 1871, there was 18.1 miles of sewers in Cincinnati, ten years after there were 50.7 miles, at the end of 1891, 123.5, December 31, 1901, 224.6 miles, and to the end of this year, 351 as before mentioned. Similarly, in this period of forty years the number of houses connected has increased from 671 in 1871 to about 36,000 (estimated) at the end of 1909.

Garbage and Night Soil.

At Cincinnati, garbage is regularly collected under contract by a private company, and is reduced for the recovery of by-products, chiefly grease and fertilizer base. The quantity of garbage collected and reduced in 1911 was about 35,000 tons. While practically no garbage enters the Ohio River or tributary streams, the operation of the reduction plants entails considerable offensive wastes common to all such plants, and at Cincinnati these are allowed to escape into the river. Night soil is collected by licensed men whose work is confined to the outskirts of the city and its suburbs, where there are no sewers. No record is kept of the quantity of material collected. A Federal statute prohibits the discharge of night soil or other refuse into the river, but does not cover such discharge through sewers, accordingly it is the practice at Cincinnati to discharge night soil through manholes in the sewer section of the city.

Manufactural Wastes.

Although the industries of Cincinnati are many and varied, but small quantities of wastes of objectionable character are discharged directly into the river along the river front. No doubt some manufacturing wastes enter the river through the sewers. The larger manufacturing plants which produce objectionable wastes are located along the banks of Mill Creek in Hamilton County. An investigation of this stream from the point of view of pollution by domestic sewage and manufacturing wastes, made in 1902, by the Ohio State Board of Health, developed very instructive data regarding manufacturing wastes. Along Mill Creek, beginning at Ri-alto and continuing to within the city limits, there were found seven soap, candle and oil factories, one pickle factory, four tanneries, six slaughter and packing houses, a large stock yard, two glue factories, four breweries, two distilleries, two fertilizer works, three paper mills, two paint and varnish works, two starch factories, two tarred paper concerns, two hair and feather concerns, three cotton mills, six large woodworking mills, six carriage factories, three brass works, twenty-four machine shops and foundries, three fireworks factories, several small brick yards, one ice factory, and a large number of smaller miscellaneous establishments.

From Lockland to its confluence with the Ohio, Mill Creek is an open sewer, foul smelling nearly all the time, and full of black putrid mud which washes over everything in the way of the stream, making it unsightly as well. Only after several general rains does it lose its offensiveness, and then only for a short time.

No investigations of these conditions were made in connection with this preliminary report, but from inspections of the last two years it may be said that conditions are now worse than those shown by the investigations of 1902. Shortly conditions as regards pollution by domestic sewage will be relieved by the construction of sewage purification plants for three or four of the larger communities situated in the Mill Creek valley. As it is well known, Mill Creek has been considered one of the most polluted streams in the State and the problem of regeneration has been widely discussed. The filth and manufacturing wastes along its watershed should be considered in connection with the direct pollution of the Ohio River by such wastes, since the waters of the creek, especially under dry weather conditions, are but little purified before their confluence with the Ohio River.

DAYTON, KENTUCKY.

The city of Dayton, Campbell County, Ky., has a population of about 6,979 and is 462.0 miles below Pittsburgh. The city has practically all modern public improvements, including a water supply, sewerage system, paved streets and electric lights.

Water Works.

Its water supply is obtained from the city of Newport, to the discussion of which reference should be made for details. The average daily consumption of water at Dayton is 110,000 gallons.

Sewerage.

The sewers of Dayton consist of six miles of combined sewers, which have three outlets into the Ohio River, all below the Cincinnati, Newport and Covington intakes. It is estimated that the Dayton sewers are used by about 1,250 people.

Garbage and Night Soil.

It is said that the garbage collected at Dayton is so disposed of as ultimately to reach the Ohio River. Night soil is discharged into the trunk sewers and it also enters the Ohio River.

Manufactural Wastes.

There are no manufactural wastes to be considered at Dayton.

Typhoid.

There were two deaths from typhoid fever in 1910.

BELLEVUE, KENTUCKY.

Adjoining the city of Dayton is Bellevue, Campbell County, Ky., a city of 6,831 people. Its public improvements include a water supply, system of sewers, paved streets and street lights.

Water Works.

Bellevue owns its own water mains but purchases water from Newport, Kentucky. For details, reference should be made to the Newport data. Information obtained from Newport indicates that about 6,000 inhabitants at Bellevue consume daily 110,000 gallons of water.

Sewerage.

The sewerage system of Bellevue comprises seven miles of pipe sewers on the combined plan, with seven outlets into the Ohio River, ranging in size from ten to thirty-six inches. It is estimated that a population of 2,500 is connected to the Bellevue sewers.

Garbage and Night Soil.

Both garbage and night soil are said to eventually reach the Ohio River from Bellevue, the former through the practice of discharging garbage on low land, whence it may be washed into the river, and the latter by direct discharge into the sewers.

Manufactural Wastes.

There are no industries at Bellevue of interest in connection with the use of the river water nor the discharge into the river of wastes of a polluting character.

Typhoid.

There were four deaths from typhoid fever in 1911.

NEWPORT, KENTUCKY.

Adjoining Bellevue is the city of Newport, Campbell County, Ky. This city has a population of 30,309, and has many and varied manufacturing interests. Among its public improvements are included a water supply, sewerage system, paved streets and electric street lights.

Water Works.

The water works, constructed in 1873, comprise an intake in the Ohio River, situated on the Kentucky shore above all local pollution from Dayton and a short distance below the Cincinnati Water Works intake, a pumping plant, a storage reservoir and a distribution system. The water works also supplies water to Dayton and Bellevue and has a total daily pumpage of 3,220,000 gallons, of which 2,000,000 gallons are consumed in Newport. The supply receives no further treatment than that afforded by the 50,000,000 gallon storage reservoir, which under the present consumption permits a storage period of 22.6 days. The total number of water consumers in Newport is about 30,000, and it is said that there is used very little well water.

Sewerage.

The sewerage system of Newport is on the combined plan and is about thirty-four miles in length, and has eleven outlets into the Licking River and the Ohio River. It is estimated that practically the entire population is connected to the sewer.

Garbage and Night Soil.

Garbage is said to be buried on low land near the river and thus eventually enters the stream. Night soil is regularly collected and caused to enter the Ohio River by direct flushing into the sewers. The United States Government prohibits the direct discharge of refuse into the river, but the statute does not prevent the disposal of night soil when flushed into the river through the city sewers.

Manufactural Wastes.

The industries at Newport are many, but in general they do not contribute much waste as regards the pollution of the river. A rolling mill, however, located on the Licking River, contributes spent acid pickling liquors corresponding to the monthly consumption of sixty tons of sulphuric acid and ten tons of hydrochloric acid.

Typhoid.

There were eight deaths from typhoid fever in 1911.

COVINGTON, KENTUCKY.

The city of Covington, Kenton County, Ky., adjoins Newport and is 466.5 miles below Pittsburgh. It is directly opposite Cincinnati, Ohio. The population, including the suburb of Latonia, is estimated at 53,270. Its public improvements include a water supply, sewerage system, and many miles of paved streets.

Water Works.

The water works, constructed in 1890, use the Ohio River as a source of supply. Sedimentation was then, and is now, the method of treatment. The water works comprises a direct intake on the bottom of the Ohio River, located near the Kentucky shore, a short distance below the Cincinnati and Newport intake and above all sources of local pollution, a pumping plant, and three large storage reservoirs with a total capacity of 111,000,000 gallons. The storage

available at Covington is thirty-four days, on the basis of a daily consumption of 3,267,000 gallons, which includes water furnished to Ludlow and to the suburbs. It is estimated that this stored water is supplied to a total population of 60,000 people. For use in case of emergency, a connection exists between the Covington mains and those of the adjacent city of Newport.

Sewerage.

The sewerage system of Covington consists of fifty-seven miles of brick and pipe sewers on the combined plan. The system has twenty outlets into the Licking River and ten outlets into the Ohio River. It is estimated that a population of about 41,000 is connected to the sewer.

Garbage and Night Soil.

Garbage and night soil are regularly collected by the city and hauled to the municipal crematory and burned. As stated in the city report for 1910, in that year there were collected 4,731 tons of garbage, 33,000 loads of ashes and rubbish, and 193 loads of offal.

Manufactural Wastes.

There are practically no manufactural wastes to be considered at Covington.

Typhoid.

There were seventy-six cases and seven deaths from typhoid fever in 1910.

LUDLOW, KENTUCKY.

The village of Ludlow, Kenton County, Ky., immediately adjoins Covington and has a population of 4,163. The city includes in its public improvements a water supply, sewerage system and paved streets.

Water Works.

As stated under the discussion of the Covington water supply, the Ludlow water supply is obtained from the Covington plant. It is estimated that the number of water consumers in Ludlow is 3,300.

Sewerage.

Ludlow has a limited mileage of sewers. The system has seven outlets into the Ohio River and into the local streams. It is estimated that a population of about 2,000 is tributary to these sewers.

Garbage and Night Soil.

Under a city ordinance, garbage and ashes are disposed of at the discretion of the householder, provided he creates no nuisance. Some garbage is privately collected by farmers and fed to hogs. Very little night soil is removed, since it is the practice to abandon old vaults and construct new ones.

Manufactural Wastes.

There are no manufactural wastes to be considered at Ludlow.

LAWRENCEBURG, INDIANA.

Lawrenceburg, Dearborn County, Ind., has, together with Greendale lying adjacent to it, a population of 4,500. It is four hundred and ninety-one miles from Pittsburg and twenty-two miles below Cincinnati. There is a municipal electric light plant and a small private water plant which supplies about one-fourth of the town. There is a total of eight hundred feet of paved streets.

Water.

The majority of the people depend upon the public wells located at convenient corners for their water.

Sewerage.

There are no sewers in Lawrenceburg. The city is below the high water mark, but is protected by a levee. This would necessitate a sewage pumping station, making a sewerage system expensive, and so far no steps have been taken along this line.

Garbage and Night Soil.

Garbage is dumped inside the town limits and along the river bank. Night soil is hauled to the country and buried.

Manufacturing.

Lawrenceburg has one large flour mill, one brewery and three distilleries. Mention of the three distilleries has been made in connection with manufacturing pollution.

Typhoid.

Many of the citizens work in Cincinnati and when the filtration plant there, was put into operation, there was a decided drop in the typhoid rate. There were but six cases and no deaths from January 1, 1910, to July 10, 1911.

AURORA, INDIANA.

Aurora, Dearborn County, Ind., has an estimated population of 4,400 and is four miles below Lawrenceburg. Improvements in town include a short sewerage system and a private water, gas and electric lighting system.

Water Works.

A private company supplies about half the population with water, the rest of the people using cisterns and wells. Both the tap and cistern waters analyzed were of poor quality.

The public supply is drawn from the river about one hundred and eighty feet from the shore line when there is an eight-foot stage at Cincinnati. The average daily pumpage is about 300,000 gallons. Centrifugal pumps are used to lift the water to two wooden sedimentation tanks, their combined capacity being 100,000 gallons. From these tanks the water flows by gravity to two filters of the Jewell type. The effluent from the filters goes to a clear well reservoir of 50,000 gallons capacity, then to a steel tank of 280,000 gallons capacity located on one of the high hills. The distribution system is fed by gravity from this point.

Sewerage.

There is about a mile of combined sewer located in the center of the town. About one-sixth of the population is connected. Another sewer ordinance has been passed by the council and a second sewer will probably be installed before long in another portion of the town.

Garbage and Night Soil.

The garbage is dumped within the city limits. The night soil is taken to a farm two miles from town and buried.

Manufactural Wastes.

Aurora supports a tool works, foundry, and a coffin, a furniture, a chair and a wheel factory. The total number of employes is 640 and all use the city water for drinking purposes. No factory waste products of a polluting character enter the river at this point.

Typhoid.

The typhoid death rate here is high, but if the city water is responsible for this it will be reduced if the hypochlorite of lime plant, now being introduced, is properly operated.

RISING SUN, INDIANA.

Rising Sun, Ohio County, Ind., has a population of 1,513, and is nine miles below Aurora. There are no sewers, water works or other public improvements in town.

Water.

Nearly all of the drinking water is taken from cisterns, but there are six public wells, which are driven from eighty to one hundred and fifty feet in depth.

Manufactural Wastes.

There is a canning and a harp factory located here, employing about fifty people each. Peelings and washings from the former are emptied into the river, and the sewage from both places goes to private vaults.

Garbage and Night Soil.

The garbage and night soil is dumped into the river and along the bank.

Typhoid.

The general health conditions are very good and there has been but one case of typhoid, with no deaths, since January, 1910, to July 18, 1911.

VEVAY, INDIANA.

Vevay, Switzerland County, Ind., has a population of 1,250 and is twenty-nine miles below Rising Sun. Public improvements include a municipal water works and lighting system. There is no sewerage system in the place, but the natural drainage is good, and takes care of the surface water.

Water Works.

The water works pumping station is located below the town and consequently gets the drainage at its intake. About 200,000 gallons are pumped daily. A large reservoir with a capacity of one and one-half million gallons, is located on one of the hills at an elevation of 200 feet. This gives a pressure of eighty-five pounds in town.

Garbage and Night Soil.

There is no systematic collection of garbage and night soil. Some of it is dumped along the river and some on a dump outside of the town.

Manufactural Wastes.

There is no pollution from manufacturing sources at this point.

Typhoid.

The general health conditions are very good. In Vevay, during the year 1910, there has been two cases and two deaths from typhoid. This year, to date, August 3, 1911, one case and no deaths. The two deaths would give a rate of 133.0 per hundred thousand population, which is extremely high.

CARROLLTON, KENTUCKY.

Carrollton, Carrol County, Ky., has a population of 2,500 and is located eight miles below Vevay, Indiana.

Water Works.

A municipally owned water works, using the Ohio River as its source, supplies about 200 consumers, including hotels and factories. About seven hundred people depend on this supply. The average daily consumption is about 200,000 gallons. A pump of a million gallons daily capacity is used about five hours each day and pumps into the storage reservoir of 250,000 gallons capacity.

Sewerage.

There is no municipal sewerage system, but two private sewers have outlets into the Ohio River; one with eight dwellings, one livery stable, one boarding house, a saloon, the county jail and court house; the other, the leading hotel and a couple of private dwellings. Most of the private dwellings use cesspools or dry wells.

Manufactural Wastes.

There are two distilleries at this point, one in Carrollton and one just across the Kentucky River, both within five hundred yards of the confluence of the Kentucky and Ohio River. One employs thirty men and the other thirty-five, including Government employees and cattle feeders. The distillery feeds approximately one thousand head of cattle. The cattle pens are on the banks of small

creeks, dry part of the time, but at every freshet they are flooded out into the Kentucky River and then into the Ohio.

A furniture factory employing one hundred and fifty men is located a little further up the Kentucky River and has its sewerage system with an outlet into the Kentucky River.

Typhoid.

In 1910 there were two deaths from typhoid fever.

MADISON, INDIANA.

Madison, Jefferson County, Indiana, has a population of 6,394. It is sixty-seven miles below Cincinnati and twelve miles below Carrollton, Kentucky.

Improvements include a private electric light and artificial gas plant, a municipally owned water plant, but operated under contract by a private company, three and a quarter miles of combined sewerage system, and about four hundred feet of paved streets, nearly all of the balance of the streets being macadamized.

Water Works.

The water is pumped direct from the river to a reservoir, capacity 720,000 gallons, located on a hill near the pumping station. The average daily pumpage is 1,000,000 gallons. There are 1,100 taps in service, with about one-half the population using the water. An analysis of the water showed it to be of doubtful quality for drinking and domestic purposes.

Sewerage.

There is about three and one-fourth miles of combined sewers, with about ten per cent. of the people connected. All the sewage goes direct to the river, there being eleven outlets along the river front. From one to seven feet of clay cover the gravel strata and many cesspools drain into it.

Garbage and Night Soil.

Most of the garbage is taken to the city dump, located about half a mile back from the river. Ashes, leaves and street refuse is dumped along the river bank about two blocks below the wharfboat. Night soil is collected by licensed men and is dumped into the river opposite the town.

Manufactural Wastes.

Twelve manufacturing establishments were visited and found to employ altogether 770 men. Of the twelve, only four empty waste into the river. The catsup company, employing about 125 men, empties twenty barrels of peelings and seeds per day, a packing company, employing thirty-one men, drains all the wash water into Crooked Creek, which empties into the Ohio River below town. Two mills, employing 350 men, empty about 280 barrels of spent liquor and dye into the river each day.

Typhoid.

In 1910 there were thirty-six cases and three deaths from typhoid, and in 1911 to date of visit, August 5th, there were nine cases and two deaths.

JEFFERSONVILLE, INDIANA.

Jeffersonville, Clark County, Indiana, has a population of 10,410, and is forty-four and one-half miles below Madison, Ind.

Improvements include thirteen and one-half miles of improved streets, two of which are brick pavement and eleven and one-half macadamized, four and three-fourths miles of combined sewers, a system which is very poor and to which only four hundred people are connected. The electric light, gas and water are owned and operated by private companies.

Water Works.

The old water pumping station was built in 1888 and used the river as a source of supply. Two years ago there was a typhoid epidemic, and this started a strong agitation against the use of the river water. Twenty-three wells, averaging about forty-five feet in depth, were sunk and a new pumping station established about a mile back from the river. A sufficient and excellent supply was found at this point. January 1, 1911, the new station started pumping and the use of river water was discontinued. The new station is equipped with two Dean duplex pumps of 2,000,000 and 1,500,000 gallons, respectively, and supply an average daily consumption of 1,000,000 gallons.

Sewerage.

The sewerage system is very poor, and only four per cent. of the population are connected. There are 4.82 miles of combined

sewers, with eight outlets into the Ohio River. The city engineer's office has plans for a system for the entire city, but nearly all plans which have been proposed lately have been defeated by the very people who would benefit by them, and the adoption of the new system is not probable for some time.

Garbage and Night Soil.

Some of the garbage is taken to the country and fed to hogs, while the rest of it is dumped where convenient. The night soil is hauled to the country.

Manufactural Wastes.

Five factories and shops visited employ 1,323 men, but they empty no detrimental wastes into the river other than city sewage.

Typhoid.

In 1910, when the river water was still in use, there were fifteen cases of typhoid fever with six deaths. This year to date, August 17, 1911, with a well water supply installed, only five cases and one death are recorded, and two of these cases are imported. The general health conditions are very good.

LOUISVILLE, KENTUCKY.

Louisville, Jefferson County, Kentucky, has a population of 221,000 and is one hundred and thirty-one and one-half miles from Cincinnati, Ohio.

An extensive sewer system, just completed, carries the sewage of a large portion of the population about five miles below the city, and a proposed system, when built, will intercept the sewers now emptying along the river front and deliver into the present system.

At the end of 1911 the city has 208.6 miles of improved streets in an area of twenty-five square miles.

The new filtration plant, completed in 1909, using the Ohio River as a source of supply, gives the city an abundant supply of good water.

The parks, public buildings, etc., are in keeping with those of any modern city.

Water Works.

The Louisville Water Company was incorporated in 1854 and became, in the beginning, a quasi-municipal corporation through the city acquiring 5,500 of the 10,000 shares. In 1859 it acquired

2,200 shares, and later the remaining shares, thereby securing complete ownership.

The actual construction was commenced in 1856, and in October, 1860, water was first delivered by the present Cornish pumping engine at River Pumping Station No. 1. These engines had a combined capacity of 12,000,000 gallons. In 1879 two small Blake pumps supplemented them, supplying on the average about 700,000 gallons per day.

In 1893 River Pumping Station No. 2 was completed and a 16,000,000 Leavitt vertical compound engine was placed in service in conjunction with the pumps in Station No. 1. In 1909 the twenty-four million vertical, triple-expansion pumping engine was placed in service.

In 1898 the first steps in the construction of the filter plant were taken. The filter house and clear water basin were completed in 1902, and the coagulant house and filter tanks shortly afterwards.

A new pumping station was needed at Crescent Hill, where the filters were located, and one was completed in 1907 and two twenty-four million triple-expansion engines installed in it.

The filter plant has been in operation successfully since July, 1909, and the city has a supply of clear and wholesome water.

An elevated steel tank, designed to give a pressure of one hundred and thirty pounds in the commercial center of the city, has never been utilized in actual operation, as many of the water mains could not stand this high pressure. At present the riser to the standpipe is used as a safety valve or balance to the pump. Three hundred and fifty miles of cast iron mains, with three hundred miles of service connections, give a total of five hundred and fifty miles of water pipe of all sizes in use. The average daily consumption is twenty-two million gallons, supplying the larger portion of the 221,000 population.

Sewerage.

In 1906 the voters of Louisville, by more than two-thirds majority, authorized the issue of \$4,000,000 bonds for the construction of a comprehensive system of sewerage. The system recommended by the engineers, and adopted, consisted of the Southern Outfall from the Ohio River to Dry Run, near Floyd Street, the South Louisville Branch Sewer, various sewers for the relief of certain flooded districts already partially provided with sewerage, a trunk sewer for the northwestern district, a sewer connecting the Twenty-first and Twenty-seventh street sewer, the temporary improvement

of the sanitary condition of Beargrass Creek between Jackson Street and the cutoff embankment, a system of sewerage for the district reached by Ferndale Avenue, Castlewood Avenue, etc., a separate system of sewerage and a system of storm drain for the Northeastern district. The plans also included an intercepting sewer along Beargrass Creek and such lateral sewers as can be built out of the surplus fund after the completion of the work mentioned.

More than one-half of the above work is completed and Louisville now has 124.42 miles of sewerage.

All the trunk sewers were constructed with the idea that by the building of an additional intercepting sewer along the Ohio River, all of the actual sewage can at any time in the future be carried to one point. Such action has been agitated by State and Federal authorities, and it was thought wise to keep this contingency in mind.

Garbage and Night Soil.

Several years ago the city purchased an incinerator that proved a failure, and not much has been accomplished since then in solving the problem of garbage disposal. Several capitalists interested in garbage disposal have visited the city with a view of making a contract for the purpose of taking care of the garbage for what profit could be made out of it. Unfortunately, Louisville's charter does not permit the city to make a contract of this kind for more than one year at a time. At the present time most of the garbage is taken to the city dumps.

Manufactural Wastes.

Louisville is an extensive manufacturing center. Manufacturing pollution entering the river at this point is caused principally by slaughtering and meat packing houses, with 428 employes, canning factories with 204 employes, distilleries and breweries with 654 employes, and woolen mills with 761 employes.

The total number of people employed in all industries is over 28,000.

The condition of the river front from industrial pollution is bad, and will be dealt with later in connection with special water samples collected at that point.

Typhoid.

The typhoid rate for 1910 was 27.4 per hundred thousand. Daily examinations of the filtered water showed no evidences of

contamination. Every case is traced and it appears that a few originated through the drinking of unboiled and unfiltered Ohio River water and water from springs receiving surface drainage, by picnickers on the river. About five hundred public wells are in general use. Owing to the gravel and sand subsoil found everywhere under the city, the surface drainage easily finds its way into the water supply of the city pumps and in many cases they are suspected of being the source of infection. The water company is installing free hydrants where the wells have been condemned. When all the wells have been closed the typhoid death rate will probably be greatly reduced.

NEW ALBANY, INDIANA.

New Albany, Floyd County, Indiana, has a population of 20,629 and is distant five miles from Louisville, Kentucky.

Improvements include a good sewerage system, nine miles of brick and other pavement and fifty-two miles of macadam, and a water and lighting system owned by a private company.

Water Works.

The source of supply is the Ohio River, the intake being about one hundred and fifty feet from shore at low water. The water is pumped to the reservoir two hundred and seventy-five feet above by a centrifugal electrically-driven pump of 3,400,000 gallons capacity, and a plunger pump of 2,600,000 gallons capacity. There are five basins at the reservoir, their combined capacity being 24,000,000 gallons, about sixteen days' supply.

Thirty-five miles of mains and distributing pipes, ranging in size from one-half inch to twenty inches, carry the water throughout the city. The average daily consumption is one and one-half million gallons.

The water, like that of other cities using the river water without filtration or treatment, is of doubtful purity.

Sewerage.

New Albany has seventeen miles of sanitary and eight miles of storm sewage, with one thirty-six inch outlet into Falling Run Creek for the former and four for the latter. The whole system is arranged so that in the event a treatment of the sewage is found necessary at some future time, it may all be conveyed to the one point.

Garbage and Night Soil.

The garbage is taken to the city dump along the creek and the night soil hauled to the country.

Manufactural Wastes.

Twenty-one of the large factories and shops were visited. These employed a total of eighteen hundred men. Of the twenty-one, but five discharge detrimental waste into the river. Four leather companies, employing 215 men, discharged about 30,000 gallons of spent liquor and lime, and a stove works, employing 100 men, discharged a quantity of slightly acid water.

Typhoid.

In 1910 there were eighteen cases and three deaths from typhoid, and from January 1 to August 23, 1911, there were twenty-five cases and three deaths. During August, 1911, there were eleven cases and three deaths. Up to the administration of the present health officer, the records of the office had been kept very loosely, and it is thought that many cases have not been recorded. An analysis of several samples of water taken both from the city mains and public wells showed the presence of *B. coli*.

WESTPOINT, KENTUCKY.

Westpoint, Hardin County, Kentucky, has a population of 1,000 and is twenty-one miles below New Albany, Ind. There are no improvements of any importance.

Water.

The water supply is taken from wells and is considered of a good quality.

Sewerage.

There is about six hundred feet of storm sewer in poor shape.

Garbage and Night Soil.

The garbage is taken to the town dump and the night soil is buried.

Manufactural Wastes.

There are no manufacturing concerns of consequence at this point.

Typhoid Fever.

In 1910 there were two cases of typhoid and no deaths, and this year to date, September 3, 1911, there were no cases.

BRANDENBURG, KENTUCKY.

Brandenburg, Meade County, Kentucky, has a population of 750 and is sixteen miles below Westpoint, Ky.

Water.

The water is taken from cisterns and springs.

Sewerage.

The town has no sewers.

Garbage and Night Soil.

Hogs are kept in town and some garbage is fed to them, and the garbage and night soil which accumulates is dumped along the river front.

Manufactural Wastes.

No manufacturing establishments are located at this point.

Typhoid Fever.

There was no typhoid fever in 1910.

LEAVENWORTH, INDIANA.

Leavenworth, Crawford County, Indiana, has a population of 710 and is eighteen miles below Brandenburg, Ky.

Water Works.

The town has a water company which pumps from a large spring to a reservoir on one of the hills. The pumps are electrically driven and the reservoirs hold 285,000 gallons. The average daily consumption is twenty-five thousand gallons, so there is a storage of over eleven days. The spring is located at the foot of a hill on which there is a road about half way up, which carries a little drainage into it. When the river is up the water backs into the little pond where the spring is located.

Sewerage.

There are no sewers in town.

Garbage and Night Soil.

No systematic collection of garbage and night soil is made here.

Manufactural Wastes.

There are no manufacturing concerns at this point.

Typhoid Fever.

In 1910 there were four cases and no deaths from typhoid, and in 1911, up to the date of this visit, September 4, 1911, one case and no deaths.

CLOVERPORT, KENTUCKY.

Cloverport, Breckinridge County, Kentucky, has a population of 1,500 and is thirty-seven miles below Leavenworth, Ind.

Water.

The drinking water in the town is obtained from wells and cisterns.

Sewerage.

There is no sewerage system in town.

Garbage and Night Soil.

The garbage is dumped along the river bank and the night soil is buried.

Manufactural Wastes.

There are a few factories and shops of minor importance.

Typhoid Fever.

In 1910 there was one case of typhoid and no deaths. January 1, 1911, to date, September 7, 1911, there were no cases.

CANNELTON, INDIANA.

Cannelton, Perry County, Indiana, has a population of 2,130 and is twelve miles below Cloverport, Ky.

Water Works.

The water is pumped direct from the river to the reservoir on the hill. The average daily consumption is 160,000 gallons and the

reservoir holds about 560,000 gallons or a three and one-half days' storage. It is an open pond, unprotected, and it is said that small boys occasionally go in swimming in it. Wooden mains are used in the distribution systems, but are being replaced by iron ones when repairs are needed. The supply is of doubtful purity and the system as a whole is in bad shape.

Sewerage.

Three quarters of a mile of combined sewers gives service to about one hundred people. It has one outlet into the river.

Garbage and Night Soil.

The garbage is taken to the town dump and the night soil is emptied into a creek that flows into the Ohio.

Manufactural Wastes.

A cotton mill, employing about 300 hundred people, a sewer pipe company with 52, and a flour mill with 10, comprise the principal industries of the town. The waste water from the mills amounts to about 30,000 gallons per day and is discharged into the Ohio.

Typhoid Fever.

In 1910 there were six cases with no deaths, and in 1911, to the date of this visit, September 8, 1911, there were three cases with one death.

HAWESVILLE, KENTUCKY.

Hawesville, Hancock County, Kentucky, has a population of 1,000 and is twelve miles below Cloverport, Ky.

Water Works.

The water is taken from the river and pumped to a reservoir on one of the hills. It is a private company and only has about one hundred consumers. Most of the people depend upon well water and cisterns for drinking purposes.

Sewerage.

There are no sewerage systems.

Manufactural Wastes.

There are only a few manufacturing concerns and they are of minor importance.

Garbage and Night Soil.

The garbage is dumped along the river and the night soil hauled out of town and buried.

Typhoid.

In 1910 there were about fifteen cases of typhoid with no deaths, and in 1911, up to the date of this visit, September 6, 1911, there were ten cases with no deaths.

TELL CITY, INDIANA.

Tell City, Perry County, Indiana, has a population of 3,369 and is three miles below Hawesville, Ky. The city is fortunate in having a good quality of water and a good sewerage system. The light plant is owned by the city.

Water Works.

The water works is owned by that city and the supply is obtained from four 6-inch wells, averaging about seventy feet in depth. These wells are located along the river bank. Two 12-inch by 18-inch Stillwell-Bierce and Smith-Vaile pumps are used. The average daily pumpage is 190,000 gallons. The water is pumped to a reservoir of 110,000 gallons capacity, and from there is supplied to the town. The water is of good quality. It is a little hard, but otherwise very satisfactory. About one-half the population use the water.

Sewerage.

About half the people of the city are connected up to the sewers. There are 2.9 miles of combined sewers, with seven outlets into the Ohio River.

Garbage and Night Soil.

The garbage is hauled to the dump, located back from the river, and the night soil is buried.

Manufactural Wastes.

Tell City is quite an active manufacturing center, there being fifteen principal concerns, employing about 750 men. The majority

of them are furniture companies. A woolen mill, with about ten thousand gallons of wool waste and wash water, and a small distillery causes the only pollution at this point, which is of minor importance.

Typhoid.

In 1910 there were three cases and no deaths, and in 1911, to date of visit, four cases and three deaths. The general health conditions are fair.

TROY, INDIANA.

Troy, Perry County, Indiana, has a population of 536 and is distant four miles below Tell City, Ind.

Water.

The water supply is obtained from cisterns and wells.

Sewerage.

There are no sewers in town.

Garbage and Night Soil.

The garbage is dumped along the river bank. They have no system of collection of the night soil.

Manufactural Wastes.

There are no manufactural wastes to be considered.

Typhoid.

In 1910 there were no cases of typhoid, but in 1911, from January 1st to September 11th, the date of this visit, there were three cases and one death. General health conditions are good.

LEWISPORT, KENTUCKY.

Lewisport, Hancock County, Kentucky, has a population of 600 and is seven miles below Troy, Ind.

Water.

The water supply is obtained from wells and a few cisterns.

Sewerage.

There is no sewerage system in town.

Garbage and Night Soil.

The garbage is dumped along the river and the night soil is buried.

Manufactural Wastes.

There are no manufacturing concerns at this point.

Typhoid.

The general health conditions are good. In 1910 there was no typhoid, and in 1911, to date, September 12, 1911, there was one case and no deaths.

GRANDVIEW, INDIANA.

Grandview, Spencer County, Indiana, has a population of 735 and is four and one-half miles below Lewisport, Ky.

Water.

The water supply is drawn from wells and cisterns. There are two public wells about sixty feet in depth.

Sewerage.

There are no sewers in town.

Garbage and Night Soil.

There is no regular dump for the garbage. The vaults are dug down to gravel and sand and do not fill up, at least they are never cleaned. They are about twenty-five feet deep, and between the sixty-foot depth for well and this twenty-five-foot depth there is a layer of hard pan about three feet thick.

Manufactural Wastes.

One flour mill in the place employs about thirty men. There are no wastes to be considered at this point.

Typhoid.

The general health conditions are good. In 1910 there were seven cases of typhoid with two deaths, and this year, to date, September 12, 1911, there was one case and no deaths.

ROCKPORT, INDIANA.

Rockport, Spencer County, Indiana, has a population of 2,700 and is distant five miles below Grandview, Ind. The city is supplied with private water and electric light plants, some sewers, macadamized streets and several manufacturing establishments.

Water Works.

The water system is owned by a private company. Four 8-inch wells, averaging about seventy-five feet deep, furnish the source of supply. They are located about one-fourth mile from the river. Each well is capable of supplying about 200,000 gallons per day, but the average daily pumpage is only about 280,000 gallons.

At the plant a reservoir has a capacity of 60,000 gallons. The water is pumped by two duplex pumps of 1,500,000 and 1,000,000 gallons capacity, respectively, from the plant to a steel tank located on a high bluff along the river, and from there the town is supplied by gravity with sixty pounds pressure. The water is of a very good quality.

Sewerage.

At present they have 1,890 feet of sanitary sewer and 2,950 feet of storm sewer. The sanitary sewer, which gives service to about fifty people, empties into the storm sewer, and there is but one outlet into the Ohio River.

An engineer has been employed and an entire system of sewerage planned, but the work is now held up by the council.

Garbage and Night Soil.

The garbage is all hauled to a dump and most of the night soil is taken to the country.

Manufactural Wastes.

There are ten manufacturing concerns and elevators, employing a total of 355 men. A box board factory discharges about 1,000,000 gallons of waste water per day into a small creek, which empties into the river just above the town proper.

Typhoid.

The general health conditions are very good. In 1910 there were two cases of typhoid with one death, and in 1911, up to the date of this visit, September 12, 1911, one case and no deaths.

OWENSBORO, KENTUCKY.

Owensboro, Daviess County, Kentucky, has a population of 17,000 and is eight and one-half miles below Rockport, Ind.

It is a prosperous town, with a good municipal electric light and water plant, an extensive sewerage system, paved streets and other improvements of cities its size.

Water Works.

The water situation is peculiar here in that two plants supply the city, a municipal and private plant.

The municipal plant draws its supply from seventeen deep wells, two hundred and twenty-five feet in depth. All of them go down below rock, and are located along the river bank. Air lifts are used to get the water into two large reservoirs of 100,000 gallons capacity each. About seventy-five per cent. of the people use this water; the average daily consumption is about 1,500,000 gallons.

Two 3,000,000 gallons Platt Iron Works pumps keep the water under direct pressure in the mains.

A 3,000,000 gallons water softening plant was in the process of construction at the time of this visit.

The private plant owned by the Owensboro Water Company draws its supply from an infiltration gallery on the Indiana side. During times of high water the supply is very turbid in the mains.

Two pumps, one 4,000,000 and one 2,000,000 gallons capacity, supply the mains under direct pressure.

About 3,000 people are supplied, and the average daily pumpage is about 350,000 gallons.

Sewerage.

An extensive sewer has been constructed and about 5,600 people sewer into it. There are about twenty miles of combined sewers, with eight outlets in the Ohio River.

Garbage and Night Soil.

The garbage is taken to the municipal dump and the privy vaults are filled in with earth.

Manufactural Wastes.

It is an active manufacturing center and employment is given to about 3,500 people. Of the twenty-four concerns visited, eight

were distilleries, some feeding cattle and one drying its slop. Of the remaining ones visited, only one, a large canning company, discharged other than common sewage. While their season was on they averaged one hundred barrels of peelings and waste and about forty thousand gallons of wash water per day.

Typhoid.

Previous to 1911 no record had been kept of the typhoid death rates. In 1911, to date of this visit, there were four deaths. The general health conditions were good.

NEWBURG, INDIANA.

Newburg, Warrick County, Indiana, has a population of 1,200 and is twenty and one-half miles below Owensboro, Ky.

Water Works.

The water is pumped from the river to a wooden standpipe or reservoir from the intake, which is about thirty feet out in the river at extreme low water. Not more than six families are connected. The majority of the water is used for sprinkling purposes. The majority of the people use either deep wells or cisterns.

Sewerage.

The town has no sewerage system.

Garbage and Night Soil.

The garbage is dumped along the river bank and the night soil is buried.

Manufactural Wastes.

There is only one concern of any importance and that is a canning company employing about eighty people. All the peelings are hauled by farmers for feeding.

Typhoid.

In 1910 there were five cases and one death from typhoid, and in 1911, to date of visit, September 18, 1911, there were no cases.

EVANSVILLE, INDIANA.

Evansville, Vanderburgh County, Indiana, has a population of 69,647 and is thirteen and one-half miles below Newburg, Ind., and one hundred and eighty-five miles below Louisville, Ky.

It is the second city in size in Indiana, and is a prosperous manufacturing center. A new filtration plant has been installed and is nearly ready for operation. Up to the end of 1910 there was 51.4 miles of improved streets in a total area of 8.5 square miles; also two hundred and fifty miles of sidewalks. It also has an extensive system of sanitary and combined sewers, and other public improvements, such as parks and modern public buildings.

Water Works.

The first pumping station was established in 1872 and was located near the Little Bayou Creek. The new and present station is located about one quarter of a mile further up the river. This site was purchased in 1898, and two years later, two 10,000,000 gallons Holly, vertical, triple expansion pumps were put into commission. The intake is about two hundred and twenty-five feet from the building and about forty feet from the shore line at low water. In the distribution system, which is supplied by direct pressure, there are eighty-eight miles of mains of varying sizes.

In November, 1908, a contract was let for a new mechanical filtration plant, work on which was started shortly afterwards. It called for twelve filters, each with a filtering area of three hundred and sixty-eight square feet, and a combined capacity of 12,000,000 gallons per day. The filter bed contains nine inches of gravel and thirty inches of sand.

Two De Laval steam turbines of 15,000,000 gallons capacity each, against a head of sixty feet, supply raw water to the three sedimentation beds, two of which have a capacity of 1,000,000 each and the third of 500,000 gallons. They give a maximum sedimentation period of five hours at the 12,000,000-gallon rate of filtration. After filtering, the water is conveyed to the clear well of 1,800,000 gallons capacity, from which point it is supplied by direct pressure to the consumers.

In the treatment either iron and lime or alum for coagulation can be used, with hypochlorite of lime for the bacteria treatment when necessary. The two iron tanks hold 8,500 gallons each, the lime tanks 15,750 gallons each and the hypochlorite tanks 2,250 gallons each.

At the time of this visit the plant was not in operation, but it was thought it would be ready about the first of 1912.

Sewerage.

Evansville has a total length of sewers of 47.7 miles, constructed as a combined system. During the year of 1910, 3.81 miles of sewer were constructed, and each year sees additions to the well maintained system.

Eight of these sewers empty directly into the Ohio, and six into Pigeon Creek. A large proportion of the population is connected.

Garbage and Night Soil.

From five to seven wagons are constantly at work collecting and hauling garbage to the New Eagle Crematory, and several thousand loads are consumed during the year. No record is kept of the amount disposed of. In addition to this a considerable amount is hauled away by farmers for feeding hogs. Nearly all the night soil collections are confined to the unsewered districts. Licensed men do this work. No record is kept of the amount collected.

Manufactural Wastes.

In order to ascertain the exact conditions as regards the wastes from manufactural establishments a total of ninety-one concerns were visited, none of importance being missed. Two packing houses and the city crematory discharge waste into Pigeon Creek, and this, together with the sewage entering, makes it quite offensive, especially during low water. Everything of value is used at the packing houses, the solids in the blood being used for fertilizer. The discharge from the crematory is the liquid pressed out of the solids. The discharge from both sources is quite offensive, especially during the warm season and at low water, and many complaints are made.

Several thousand gallons of slightly acid water from two stove companies and coal companies empty into the river at this point, but it is so diluted and the quantity so small that it is of small importance. A large canning company has all of its solid refuse hauled to the crematory for disposal.

Little manufacturing waste of a polluting character reaches the river at this point.

Typhoid.

In 1910 there were one hundred and thirty-six cases of typhoid fever with twenty deaths, a rate of 28.7 per hundred thousand.

HENDERSON, KENTUCKY.

Henderson, Henderson County, Kentucky, has a population of 13,000 and is eleven and one-half miles below Evansville, Ind.

Public improvements include municipal water, gas and electric light plants, twenty-seven miles of paved streets and a sewerage system.

Water Works.

The water works was established in 1872 and takes its supply from the Ohio River. The intake is two hundred feet out in the river from the pumping station, and the water is lifted by two Allis-Chalmers vertical pumps of 6,000,000 and 3,000,000 gallons capacity, respectively, to a standpipe of 300,000 gallons capacity. A new concrete reservoir in the process of construction has a capacity of 3,500,000 gallons and will hold nearly a two days' supply, the average daily consumption being about 2,000,000 gallons. Two electric-driven pumps of 3,800,000 gallons capacity each act as boosters in increasing the city pressure. Nearly ninety per cent. of the population use the water.

Sewerage.

There is about 9.6 miles of combined sewers, with eight openings into the Ohio River and three into Canoe Creek.

Garbage and Night Soil.

The garbage is taken to the city dump along the river inside of the city limits. Night soil is collected and burned.

Manufactural Wastes.

Fourteen manufacturing establishments employ a total of 1,350 people. A cotton mill emptying sewage into Canoe Creek and a distillery drying the slop are the two important concerns as regards this point, though neither of them discharge manufacturing wastes directly into the river.

Typhoid.

In 1910 there were thirty cases of typhoid fever with five deaths, and for the first five months of 1911 there were twenty-four cases and seven deaths.

MT. VERNON, INDIANA.

Mt. Vernon, Posey County, Indiana, has a population of 5,563 and is twenty-four and one-half miles below Henderson, Ky., and thirty-six miles below Evansville, Ind.

Public improvements include a sewerage system, sixteen miles of paved and improved streets, a private water and electric light plant.

Water Works.

The water works was built by the American Water Works Guarantee Company in 1888, and use the Ohio River water as a source, the intake being located one hundred feet from shore at low water mark. The present filter plant was installed in 1896.

One vertical Worthington pump of 2,000,000 gallons and one horizontal Worthington pump of 1,000,000 gallons capacity comprise the low service pumps which supply the steel settling reservoir of 100,000 gallons capacity.

Chemicals are added to the water under pressure before it reaches the settling basin. The alum solution is stored in two tanks of seven hundred and twenty gallons capacity each. The lime is dissolved and injected into the water.

The water flows by gravity from the settling basin to the filters, of which there are four of 500,000 gallons capacity each. A clear well located under the filters has a capacity of 60,000 gallons.

The high pressure pumps consist of one Epping-Carpenter of 2,000,000 gallons and a Worthington of 1,500,000 gallons capacity, the surplus pumpage going to a steel reservoir, from which a pressure of seventy-five pounds can be supplied by gravity.

The plant is very efficiently managed and has a small laboratory in connection to assist in the control of the filters.

A 12-inch sanitary sewer empties into the river within a short distance of the intake, and the water company has been trying to get this changed and has offered to do its part in moving this outlet below the pumping station.

Sewerage.

The sewerage system consist of nine miles of sanitary and combined sewers, with three openings into the Ohio River and four outlets into local streams. One-half of the population are connected.

Garbage and Night Soil.

The garbage and night soil is taken about a mile outside the city and dumped some distance back from the river bank.

Manufactural Wastes.

Eight manufacturing concerns, employing a total of 440 people, were visited here. The strawboard works pumps about 800,000 gallons of water from the river each day, and about 600,000 gallons of this, containing about two hundred barrels of lime, is returned to the river as wash water.

Typhoid.

In 1910 there were five cases of typhoid fever and two deaths. From January 1, 1911, to date of visit, October 3d, there was one case and no deaths. The general health conditions are very good.

UNIONTOWN, KENTUCKY.

Uniontown, Union County, Kentucky, has a population of 1,750 and is thirteen and one-half miles below Mt. Vernon, Ind.

Water.

The people depend on cisterns and driven wells for their water.

Sewerage.

Four miles of sanitary and combined sewers have a small portion of the residences connected.

Garbage and Night Soil.

The garbage and night soil is taken to the public dump.

Manufactural Wastes.

There are no manufacturing concerns and consequently no wastes.

Typhoid.

In 1910 there were four cases of typhoid fever and no deaths, and in 1911, to the date of this visit, October 4, 1911, one case with no deaths.

In Indiana there are forty-two and in Kentucky forty-one towns of less than five hundred population with no improvements of any kind.

Most of them have been on the decline in recent years, due, to a great extent, to the decrease in river traffic. A number of the cities have also decreased in population.

STATISTICAL REPORT, 1911.

This report is for the calendar year 1911. The populations are those of the United States census.

In the following tables the causes of death are arranged according to the International List of Causes of Death which has been adopted by all of the registration States of the country. This international list of causes of death was used by the United States Bureau of the Census in its last statistical compilation of causes of death.

Table 1 is a classification of all deaths, with rates per 100,000 population, classified and arranged according to the international list of causes of death.

Table 2 is a classification of deaths from all causes by months, ages, color, nationality and conjugal condition.

Table 3 gives deaths from all causes by counties, months, ages, color, nationality and conjugal condition.

Table 4 gives deaths from certain diseases by geographical sections and by counties.

Table 5 gives death rates from certain important causes by counties in geographical sections.

Table 6 gives deaths in cities from important causes for the year 1911.

Table 7 gives death rates by cities from important causes for the year 1911.

Table 8 gives annual death rates for ten years, 1902 to 1912, with average of cities of 5,000 population and over, compared with rural and State rates.

Table 9 gives deaths according to occupations by months and ages.

Table 10 gives deaths from tuberculosis (all forms) with rates per 100,000 population, for certain occupations of each sex for the year 1911.

Table 11 gives deaths from poliomyelitis by counties, months, and ages for the year 1911.

Table A gives births by counties, months, color and nationality of parents. (Stillbirths excluded.)

Table B gives births by counties, number of children born to each mother, grouped ages of parents, stillbirths, plurality and illegitimate births.

Table C gives number of births, and rate per 1,000 population, by counties for year 1911.

Table D gives marriages by counties, months, color and nationality.

Table E gives marriages by counties, and grouped ages.

BIRTHS.

The number of births reported in the State of Indiana during the year 1911 was 56,970, of which number 29,264 were males and 27,706 females. Of the total males, 28,772 were white and 492 colored. In the preceding year 56,309 births were reported; males 28,806, females 27,503. This shows an increase over the preceding year of 661 births, and an increase in the rate of .2. August had the greatest number of births, 5,206, and November the smallest, 4,409. January had the greatest number of deaths, 3,420, and June the smallest, 2,514. The birth (56,970) rate, 21.0, exceeds the death (35,231) rate, 13.0, per 1,000 population.

The nationality of parents appears as follows: American-born fathers, 52,151; American-born mothers, 52,931. Foreign-born fathers, 4,032; foreign-born mothers, 3,502. Nationality not reported, fathers 277, mothers 27.

Of the total number of children born to each mother, 16,345 were first, 12,351 second, 8,815 third, 6,350 fourth, 4,184 fifth, 3,605 sixth, 2,117 seventh, 1,389 eighth, 928 ninth, 567 tenth, 349 eleventh, 356 twelfth and over, 154 not reported.

As to the ages of parents, 779 fathers and 6,110 mothers were under twenty years of age. In the age period 50 to 60 there were 1,237 fathers and 5 mothers; age period 60 to 70, 145 fathers, and between 70 and 80 there were 22 fathers.

One thousand, seven hundred and ninety-nine stillbirths, not included in the total number of births and deaths.

The illegitimate births numbered 988, of which 494 were males and 494 females. The plural births numbered 1,020, of which 547 were males and 473 females.

MARRIAGES.

Total marriages reported, 28,999. This is a decrease compared with the preceding year of 20. December had the greatest number of marriages, 3,021, and March had the smallest number, 1,891.

The general statistics on marriages will be found in Tables D and E.

DEATHS.

Total number of deaths reported in 1911, 35,231; rate 13.0. In the preceding year, 36,513 deaths; rate 13.5. Males numbered 18,735, females 16,496. White males 18,037, colored 694, Indians 2, Chinese 2. White females 15,908, colored 588.

American born, 16,427 males, and 14,882 females. Foreign-born, 2,064 males, and 1,533 females; Indians, 2 males; Chinese, 2 males. Not reported, 244 males, 81 females. Single males, 7,609; single females, 5,439. Married males, 7,807; married females, 6,134. Widowed or divorced, males 3,126; females 4,896. Conjugal condition not reported, 193 males, 27 females.

The number of deaths with rates for 10 years appears in the following table:

<i>Year.</i>	<i>Deaths.</i>	<i>Annual Rate.</i>
1902.....	34,069	13.5
1903.....	33,892	13.4
1904.....	37,240	14.0
1905.....	36,502	13.7
1906.....	35,992	13.5
1907.....	36,461	13.4
1908.....	36,224	13.2
1909.....	36,579	13.3
1910.....	36,513	13.5
1911.....	35,231	13.0

Of the total number of deaths, 5,413, or 15.3 per cent. of the whole number occurred under one year. A decrease of 1.2 per cent. over last year.

Two thousand seventy-nine deaths occurred in the age period 1 to 4, making a total loss of children under 5 years of age of 7,492, or 21.2 per cent. of the total deaths. A decrease of 2.5 per cent. over the preceding year. This is 13.1 per cent. of the total births reported. A decrease of 2.1 per cent. over the preceding year.

In the age period 5 to 19, there were 2,326 deaths, or 6.6 per cent. of the total number. Same as the preceding year. The total loss under 20 years of age is 3,818, or 27.8 per cent. of the total deaths. A decrease of 2.6 per cent. over the preceding year.

In the age period of 20 to 49 years, practically the prime of life, there were 8,432 deaths, equal to 23.9 per cent. of total, an increase of .3 over the preceding year.

There were 335 deaths over 90 years of age, a decrease of 35 as compared with the preceding year.

PRINCIPAL CAUSES OF DEATH FOR THE LAST TEN YEARS, WITH AVERAGES.

The following table gives the principal causes of death in their numerical order for the past ten years, and also the yearly averages for each cause, and Chart No. 1 gives a graphic representation of the principal causes for 1911:

PRINCIPAL CAUSES OF DEATH IN INDIANA FOR THE LAST TEN YEARS, WITH AVERAGE.

	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	Average.
1 Organic heart disease.....	1,860	2,108	2,108	2,182	2,208	2,766	3,534	3,428	3,956	3,972	2,812
2 Pulmonary tuberculosis.....	3,952	3,915	4,436	3,998	3,854	3,888	3,825	3,706	3,853	3,525	3,895
3 Accidents.....	1,139	1,601	1,622	1,795	1,796	1,981	2,021	2,030	1,902	2,081	1,822
4 Cerebral congestion and hemorrhage.....	1,272	1,346	1,435	1,351	1,496	1,599	1,695	1,932	1,885	2,014	1,602
5 Bright's disease.....	1,133	1,164	1,296	1,423	1,549	1,644	1,420	1,616	1,847	1,997	1,508
6 Cancer.....	1,209	1,217	1,259	1,424	1,417	1,513	1,739	1,328	1,872	1,815	1,489
7 Disease of infants.....	1,183	1,318	1,726	1,908	1,766	1,783	1,664	1,454	1,523	1,727	1,605
8 Lobar pneumonia.....	2,758	2,634	3,487	3,124	2,890	3,258	2,574	2,752	1,823	1,711	2,701
9 Diarrhoea and enteritis, under 2 years.....	1,779	1,449	1,629	1,700	1,823	1,639	1,635	1,841	2,049	1,625	1,716
10 Other circulatory diseases.....	648	596	665	637	768	837	965	1,008	1,006	1,002	813
11 Broncho pneumonia.....	417	416	472	535	576	585	676	873	917	902	636
12 Typhoid fever.....	1,217	1,013	1,013	928	913	933	885	875	934	736	944
13 Other forms of tuberculosis.....	440	477	542	494	602	634	702	543	857	705	599
14 Liver diseases.....	530	527	596	578	591	561	518	599	636	659	579
15 Influenza.....	302	348	434	591	224	666	367	504	701	615	475
16 Stomach diseases.....	641	613	561	678	699	617	687	649	547	584	627
17 Other digestive diseases.....	605	519	530	498	524	491	487	536	475	506	517
18 Diarrhoea and enteritis, over 2 years.....	391	411	427	450	480	605	575	563	620	491	499
19 Malformations.....	162	152	172	167	284	266	344	433	452	479	291
20 Suicides.....	278	254	283	338	321	361	384	404	386	443	345
21 Bronchitis.....	484	523	571	540	460	431	452	630	464	420	497
22 Diabetes.....	197	197	226	231	269	252	290	291	372	389	271
23 Diphtheria.....	424	462	314	366	402	353	315	348	381	374	373
24 Whooping cough.....	164	148	94	136	157	136	416	378	459	319	240
25 Other genito-urinary diseases.....	390	437	229	194	228	266	292	318	322	315	299
26 Rheumatism.....	209	220	266	253	274	185	174	183	274	284	229
27 Appendicitis.....	145	163	164	194	174	205	248	289	272	282	211
28 Other respiratory diseases.....	352	276	325	285	276	242	195	177	271	278	267
29 Measles.....	67	73	212	6	23	213	209	156	462	281	170
30 Paralysis, without specified cause.....	762	762	935	901	777	691	399	286	241	237	599
31 Acute nephritis.....	150	191	207	189	230	169	234	281	174	213	203
32 General paralysis of the insane.....									169	200	
33 Diseases of female genital organs.....	87	85	91	88	112	123	149	149	173	198	125
34 Scarlet fever.....	150	164	192	133	101	91	95	151	205	180	146
35 Dysentery.....	277	211	184	218	235	242	245	285	304	165	236
36 Skin diseases.....	181	129	140	178	176	164	177	147	167	148	160
37 Malaria.....	161	131	116	116	102	81	83	115	151	124	118
38 Homicide.....	36	62	48	85	93	122	122	109	121	123	92
39 Simple meningitis.....	509	365	538	352	240	384	264	196	130	101	307
40 Convulsions of infants.....	339	335	345	306	254	221	114	81	51	40	208
41 Simple peritonitis.....	366	311	375	338	265	222	99	120	38	37	217
42 Cerebro-spinal fever.....	187	341	347	460	481	180	154	110	22	26	230
43 Smallpox.....	75	195	97	35	8	8	10	5	1	3	43
Total.....	27,880	27,909	30,981	30,404	30,092	31,606	31,933	32,259	33,507	32,426	30,899

INDIANA

PRINCIPAL CAUSES OF DEATHS

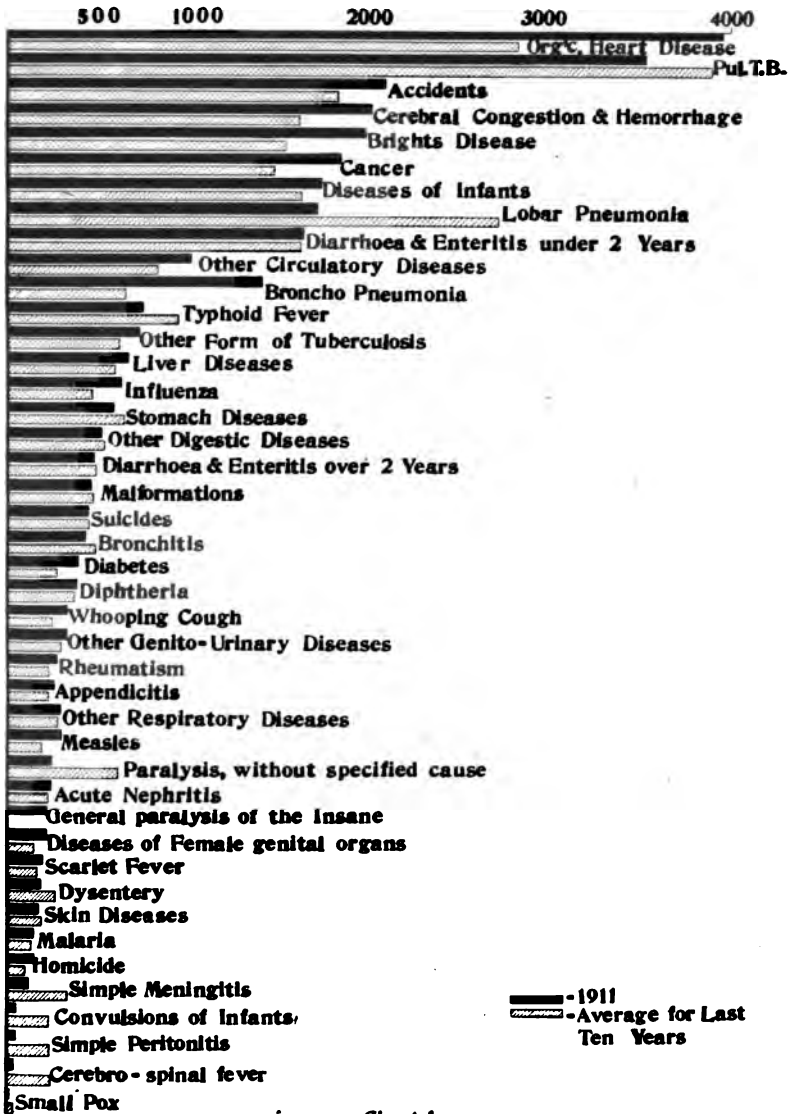


Chart 1

TUBERCULOSIS.

Havee Wrought by Tuberculosis in Indiana in 1904, 1905, 1906, 1907, 1908, 1909, 1910, 1911.

	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	Average.
Total tuberculosis deaths.....	4,978	4,492	4,456	4,471	4,527	4,479	4,710	4,230	4,543
Male deaths.....	1,907	1,745	1,675	1,964	2,085	2,112	2,191	2,032	1,951
Female deaths.....	3,171	2,793	2,771	2,328	2,442	2,367	2,519	2,198	2,573
Mothers, age 18 to 40, prime of life.....	867	987	917	826	875	1,286	1,412	1,212	1,047
Fathers, age 18 to 40, prime of life.....	490	315	255	343	383	994	1,040	970	598
Orphans made under 12 years of age.....	2,703	2,694	2,353	2,340	2,407	2,375	2,490	2,041	2,425
Homes invaded.....	3,396	3,307	3,283	3,849	4,022	3,866	3,909	3,716	3,668

TUBERCULOSIS, ALL FORMS.

Deaths by Months, with Average for Last Ten Years.

	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	Average.
January.....	402	368	420	419	415	373	411	389	409	399	400
February.....	389	350	414	407	394	428	425	374	407	376	396
March.....	459	445	550	461	443	449	437	451	498	424	461
April.....	444	411	459	426	439	455	446	449	462	401	439
May.....	405	388	502	391	398	384	412	418	402	370	407
June.....	323	363	400	361	331	356	372	410	399	361	368
July.....	320	373	397	361	329	377	357	349	373	374	361
August.....	331	340	390	355	367	389	314	353	368	339	354
September.....	353	354	347	306	307	340	341	322	354	267	329
October.....	305	306	365	326	344	327	330	327	359	306	329
November.....	320	333	352	326	346	315	344	305	311	303	325
December.....	345	368	582	353	343	329	338	332	368	310	368
Totals.....	4,396	4,414	5,178	4,492	4,456	4,522	4,527	4,479	4,710	4,230	4,540

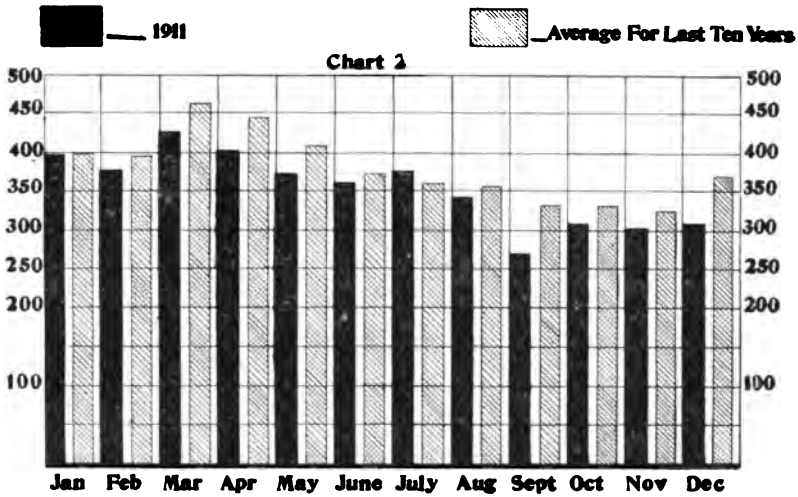
TUBERCULOSIS, ALL FORMS.

Deaths by Ages, with Average for Last Ten Years.

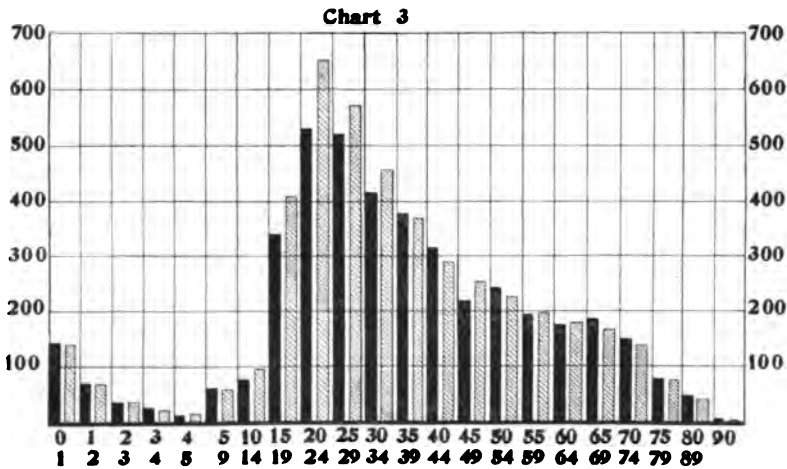
	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	Average.
Under 1 year.....	113	109	144	108	126	132	152	179	184	139	138
1-2 years.....	68	59	99	35	62	85	36	87	102	72	70
2-3 years.....	31	24	42	26	38	48	30	36	39	33	34
3-4 years.....	17	23	25	18	31	24	21	24	29	25	23
4-5 years.....	12	14	13	11	24	28	15	15	22	11	16
5-9 years.....	51	64	68	63	64	58	55	67	60	64	61
10-14 years.....	98	92	126	97	106	93	100	93	92	81	97
15-19 years.....	401	436	501	449	411	400	400	373	370	339	408
20-24 years.....	672	707	725	697	681	667	609	575	653	529	651
25-29 years.....	598	572	614	574	577	573	532	567	590	520	571
30-34 years.....	464	491	509	464	464	467	432	410	484	415	460
35-39 years.....	346	374	436	419	375	341	356	355	350	379	373
40-44 years.....	311	267	316	273	242	253	312	312	300	317	290
45-49 years.....	235	225	286	245	260	270	259	290	238	216	252
50-54 years.....	224	217	232	222	221	226	227	217	276	244	230
55-59 years.....	181	163	206	153	171	190	225	198	213	191	192
60-64 years.....	153	166	189	165	170	179	200	203	195	176	179
65-69 years.....	155	143	152	165	172	180	202	165	188	186	169
70-74 years.....	124	116	136	122	122	138	162	135	161	151	136
75-79 years.....	76	74	75	72	56	104	98	112	90	89	88
80-89 years.....	38	30	47	34	35	48	48	56	54	49	43
90 years and over.....	1	2	3	.....	4	3	5	10	7	4	3

TUBERCULOSIS ALL FORMS

BY MONTHS



BY AGES



PULMONARY TUBERCULOSIS.

Deaths by Months, with Average for the Last Ten Years.

MONTHS.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	Average.
January.....	358	324	379	395	359	330	358	334	357	340	353
February.....	353	318	372	379	349	392	363	310	340	320	349
March.....	416	399	485	421	391	398	380	385	420	369	406
April.....	409	365	409	380	386	392	379	365	378	331	379
May.....	368	339	448	346	337	329	347	347	324	306	349
June.....	297	326	359	330	282	303	318	330	322	310	317
July.....	295	323	358	310	285	314	290	276	291	300	304
August.....	300	293	332	308	312	312	257	294	278	283	296
September.....	296	318	302	263	253	286	278	253	281	208	273
October.....	266	261	322	266	289	276	275	272	294	244	276
November.....	288	297	317	287	302	276	293	253	254	256	283
December.....	306	352	353	313	310	282	287	287	304	258	306
Totals.....	3,952	3,951	4,436	3,998	3,854	3,888	3,825	3,706	3,863	3,525	3,898

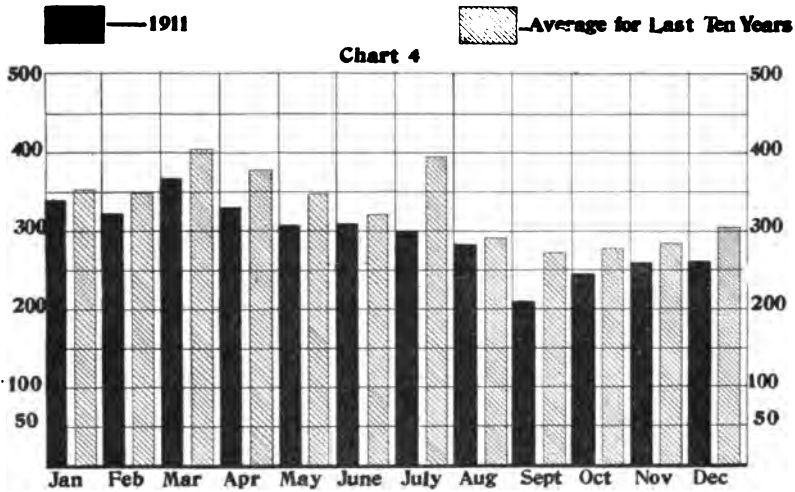
PULMONARY TUBERCULOSIS.

Deaths by Ages, with Average for the Last Ten Years.

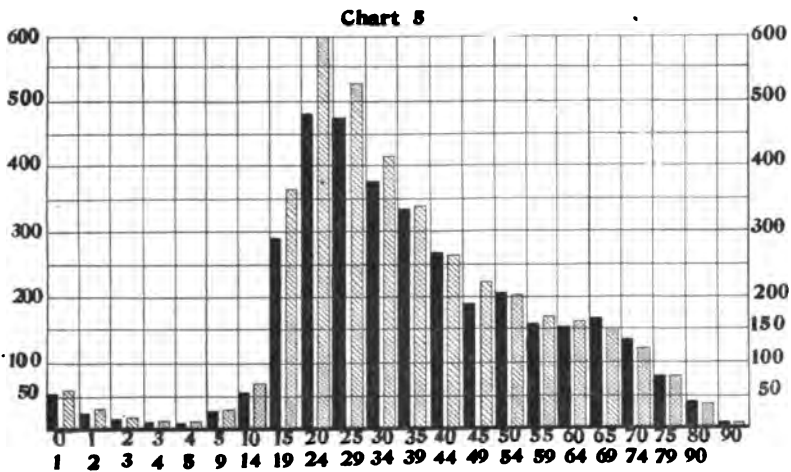
AGES.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	Average.
Under 1 year.....	59	53	72	53	60	63	78	48	63	52	60
1-2 years.....	33	28	48	37	27	31	27	30	33	22	31
2-3 years.....	16	11	23	13	19	19	15	14	13	13	15
3-4 years.....	7	10	14	10	10	6	8	8	9	5	8
4-5 years.....	6	7	9	3	8	10	4	5	9	4	6
5-9 years.....	28	35	32	37	31	29	23	30	24	26	29
10-14 years.....	75	59	101	75	76	66	62	64	62	53	69
15-19 years.....	373	393	457	411	359	356	348	329	317	290	363
20-24 years.....	626	666	687	650	625	623	562	509	578	480	600
25-29 years.....	553	635	582	538	535	517	499	502	520	474	525
30-34 years.....	435	461	486	437	429	430	395	267	431	375	414
35-39 years.....	329	343	412	385	342	318	316	322	309	333	340
40-44 years.....	299	244	271	254	220	234	278	277	263	268	260
45-49 years.....	225	213	262	219	231	238	220	255	204	192	225
50-54 years.....	196	194	209	200	198	197	188	183	242	206	201
55-59 years.....	166	175	186	139	155	165	199	165	181	159	169
60-64 years.....	140	151	175	151	145	153	170	179	158	161	157
65-69 years.....	137	123	137	154	147	163	169	142	165	168	150
70-74 years.....	112	107	121	111	103	126	138	120	141	136	121
75-79 years.....	70	67	65	66	76	88	76	101	86	78	77
80-90 years.....	36	25	39	28	31	43	42	48	39	41	37
90 years and over.....	1	1	3		4	1	3	8	6	4	3

PULMONARY TUBERCULOSIS

BY MONTHS



BY AGES



The following table, giving deaths by months, shows January had the greatest number of deaths. May had the lowest number of deaths:

January	3,420	July	3,051
February	3,092	August	2,785
March	3,364	September	2,527
April	3,247	October	2,795
May	2,826	November	2,756
June	2,514	December	2,854

January, February, March, April and May had the most tuberculosis deaths. January and February had the most pneumonia deaths. July and August were the highest in diarrheal diseases, and August had the greatest number of typhoid deaths, 109.

TUBERCULOSIS DEATH RATES PER 100,000 BY COUNTIES FOR 1911 IN INDIANA.

State Rate, 153.9.

COUNTIES.	Tuber- culosis. All Forms.	COUNTIES.	Tuber- culosis. All Forms.
Adams.....	91.5	Lawrence.....	196.0
Allen.....	128.5	Madison.....	171.7
Bartholomew.....	225.7	Marion.....	182.0
Benton.....	55.1	Marshall.....	99.2
Blackford.....	113.8	Martin.....	154.4
Boone.....	178.3	Miami.....	136.3
Brown.....	163.0	Monroe.....	179.2
Carroll.....	128.0	Montgomery.....	105.8
Cass.....	176.0	Morgan.....	174.7
Clark.....	224.7	Newton.....	123.8
Clay.....	166.0	Noble.....	83.3
Clinton.....	127.5	Ohio.....	207.9
Crawford.....	248.7	Orange.....	191.9
Daviess.....	172.9	Owen.....	149.4
Dearborn.....	130.9	Parke.....	135.0
Decatur.....	186.3	Perry.....	149.3
DeKalb.....	107.8	Pike.....	223.6
Delaware.....	145.9	Porter.....	73.0
Dubois.....	151.2	Posey.....	203.0
Elkhart.....	91.8	Pulaski.....	90.1
Fayette.....	159.6	Putnam.....	170.6
Floyd.....	234.4	Randolph.....	158.6
Fountain.....	132.1	Ripley.....	200.5
Franklin.....	163.0	Rush.....	87.8
Fulton.....	142.2	Scott.....	276.3
Gibson.....	209.0	Shelby.....	216.4
Grant.....	142.9	Spencer.....	154.7
Greene.....	141.0	Starke.....	94.6
Hamilton.....	162.8	Steuben.....	84.1
Hancock.....	162.9	St. Joseph.....	148.3
Harrison.....	123.6	Sullivan.....	246.6
Hendricks.....	153.5	Switzerland.....	151.3
Henry.....	147.8	Tippecanoe.....	174.7
Howard.....	147.7	Tipton.....	154.7
Huntington.....	131.1	Union.....	111.8
Jackson.....	153.7	Vanderburgh.....	222.1
Jasper.....	92.0	Vermillion.....	153.7
Jay.....	148.3	Vigo.....	180.8
Jefferson.....	263.7	Wabash.....	118.8
Jennings.....	147.9	Warren.....	110.1
Johnson.....	186.4	Warrick.....	182.6
Knox.....	171.0	Washington.....	140.8
Kosciusko.....	135.9	Wayne.....	148.5
Lagrange.....	132.0	Wells.....	116.0
Lake.....	113.4	White.....	147.7
Laporte.....	122.3	Whitley.....	106.6

MONTHLY ANALYSIS OF TUBERCULOSIS.

(As Published in Monthly Bulletin.)

January, 1911.—Total number of tuberculosis deaths, all forms, 389. Pulmonary form, 328. Of the total number, 31 were males in the age period 18 to 40, and left 62 orphans. The female deaths in the same age period as above numbered 66, and left 132 orphans.

Total fathers and mothers lost in the age period of 18 to 40, 97. Total number of orphans made, 194. Number of homes invaded, 371.

February, 1911.—Total tuberculosis deaths, 350. Pulmonary form, 302. The male tuberculosis deaths numbered 174, female 176. Of the male deaths, 30 were in the age period of 18 to 40, were fathers and left 62 orphans under 12 years of age. Of the female deaths, 56 were mothers in the same age period as above, and left 112 orphans under 12 years of age. Total number of orphans caused by this disease in one month, 174. Number of homes invaded, 337. As usual, over 50 per cent. of all the deaths were in the useful age of 15 to 50.

March, 1911.—Total tuberculosis deaths, 410. Pulmonary form, 353; other forms 57. Males 202, females 208. Of the males, 29 were married in the age period of 18 to 40 and left 58 orphans under 12 years of age. Of the females, 62 were married in the same age period as above and left 124 orphans. Total orphans made in one month by tuberculosis, 182. Number of homes invaded, 359.

April, 1911.—Total tuberculosis deaths, 358. Pulmonary, 300. Males numbered 161, females 197. Of the males, 32 were married in the age period of 18 to 40, and left 64 orphans under 12 years of age. Of the females, 58 were married in the same age period as above, and left 116 orphans under 12 years of age. Total orphans made in one month by this preventable disease, 180; number of homes invaded, 307.

May, 1911.—Total tuberculosis deaths, 350. Pulmonary, 288. Of the total deaths, 26 were married males in the productive age period of 18 to 40 and left 52 orphans. Of the females, 62 were in the same age period as above and left 124 orphans. The total number of young fathers and mothers lost, 88; total number of orphans, 176; homes invaded, 322.

June, 1911.—Total tuberculosis deaths, 339. Pulmonary form, 283. Male deaths numbered 161, female deaths 178. Of the total consumption deaths, 29 were fathers in the age period of 18 to 40; 67 were mothers in the age period of 18 to 40. They left 194 orphan children.

July, 1911.—Total tuberculosis deaths, 354. Pulmonary form, 287. Of the total deaths, 159 were males and 195 females. Of the males, 25 were fathers in the age period of 18 to 40. The mothers in the same age period numbered 73. Orphans under 12 years of

age to the number of 141 were left by these fathers and mothers who died of tuberculosis.

August, 1911.—Total tuberculosis deaths, 318. Pulmonary form, 259. Of the total deaths, 159 were males and 159 females. Of the males, 28 were married in the age period of 18 to 40 and left 56 orphans under 12 years of age. Of the females, 68 were in the age period of 18 to 40 and left 148 orphans under 12 years of age. Total orphans under 12 years of age made by this disease in one month, 204. Number of homes invaded, 294.

September, 1911.—Total tuberculosis deaths, 247. Pulmonary form, 195. Of the total deaths, 108 were males and 139 females. Of the males, 16 were married in the age period of 18 to 40 and left 42 orphans under 12 years of age. Of the females, 39 were married in the same age period and left 78 orphans. Total orphans under 12 years of age made by tuberculosis, 110. Number of homes invaded, 237.

October, 1911.—Total tuberculosis deaths, 285. Pulmonary form, 226; other forms, 59. Males 139, females 146. Of the total, 24 were fathers in the age period of 18 to 40, and left 49 orphans under 12 years of age; 49 were mothers in the same age period and left 100 orphans under 12 years of age. Total orphans under 12 years, 149. Number of homes invaded, 277.

November, 1911.—Total tuberculosis deaths, 283. Pulmonary form, 250. Of the total deaths from tuberculosis, 143 were males and 140 females. Of the males, 30 were married in the age period of 18 to 40 and left 67 orphans under 12 years of age. Of the females, 57 were married in the same age period and left 117 orphans. Total orphans under 12 years of age made by tuberculosis, 174. Number of homes invaded, 270.

December, 1911.—Total tuberculosis deaths, 305. Pulmonary form, 256. Of the total deaths, 163 were males and 142 were females. This is remarkable, because for the first time the males dead of tuberculosis outnumber the females. Of the males, 28 were married in the age period of 18 to 40 and left 57 orphans under 12 years of age. Of the females, 41 were in the same age period as above and left 86 orphans under 12 years of age. Total number of orphans, 145, made in one month by this disease. Number of homes invaded, 296.

PNEUMONIA.

Deaths by Months, with Average for the Last Ten Years.

MONTHS.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	Average.
January.....	473	450	579	601	490	445	425	303	349	484	459
February.....	535	424	750	781	439	646	454	384	327	422	516
March.....	497	419	761	656	541	532	414	546	417	373	515
April.....	371	330	576	260	404	290	277	436	223	338	350
May.....	207	240	326	189	232	276	166	180	193	172	218
June.....	104	129	115	90	119	144	74	64	127	56	102
July.....	70	83	101	82	88	62	45	47	59	56	69
August.....	97	86	69	69	82	68	52	52	79	62	71
September.....	113	114	86	88	98	75	69	75	87	82	88
October.....	169	134	135	148	189	145	103	130	154	116	142
November.....	196	246	251	253	300	118	195	168	299	203	232
December.....	307	389	353	372	410	301	243	253	426	248	330
Totals.....	3,319	3,044	4,102	3,594	3,392	3,202	2,517	2,638	2,740	2,612	3,116

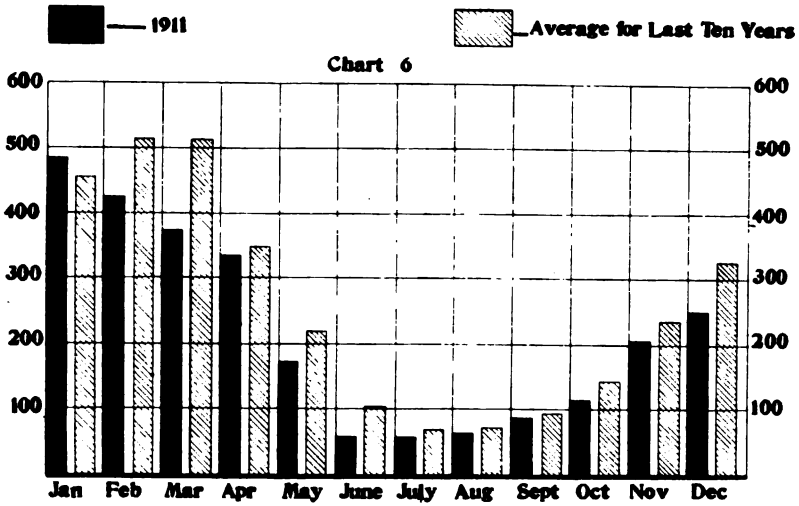
PNEUMONIA.

Deaths by Ages, with Average for the Last Ten Years.

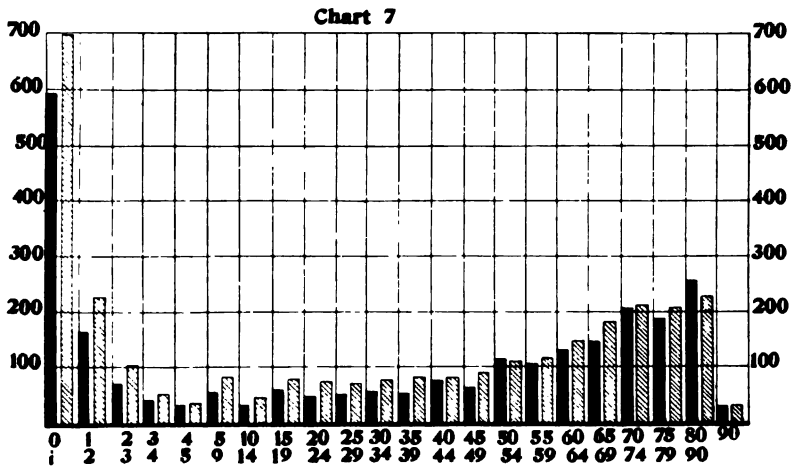
AGES.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	Average.
Under 1 year.....	692	703	919	898	714	639	623	768	731	595	698
1-2 years.....	246	216	326	251	262	209	163	206	207	167	225
2-3 years.....	113	107	145	97	127	96	63	103	94	71	101
3-4 years.....	47	57	87	63	67	57	19	41	39	44	52
4-5 years.....	39	34	53	28	46	29	22	18	23	27	31
5-9 years.....	93	102	145	90	91	65	55	65	71	55	83
10-14 years.....	55	57	72	71	50	40	35	34	24	29	46
15-19 years.....	93	88	128	89	95	63	50	52	50	62	77
20-24 years.....	107	83	108	83	77	84	61	53	59	49	76
25-29 years.....	86	72	98	79	89	90	50	49	58	53	72
30-34 years.....	96	58	104	90	86	87	63	60	62	68	77
35-39 years.....	80	78	114	107	104	98	75	66	69	65	85
40-44 years.....	104	77	105	98	106	88	71	68	73	77	86
45-49 years.....	87	103	137	106	112	100	78	57	69	68	91
50-54 years.....	118	89	137	130	130	143	72	85	100	117	112
55-59 years.....	112	132	136	140	137	125	101	108	104	108	120
60-64 years.....	142	164	195	173	155	172	122	113	114	131	148
65-69 years.....	205	172	225	237	216	215	168	162	152	147	189
70-74 years.....	192	202	261	270	229	243	212	147	189	206	215
75-79 years.....	200	192	268	226	232	238	180	166	187	189	207
80-90 years.....	181	204	271	237	232	280	209	183	233	254	228
90 years and over.....	24	27	42	28	25	33	18	34	32	28	29

PNEUMONIA DEATHS

BY MONTHS



BY AGES



MONTHLY ANALYSIS OF PNEUMONIA DEATHS.

(As Published in Monthly Bulletin.)

January, 1911.—Four hundred and fifty-seven deaths, 251 males, 206 females. Only 5 counties escaped deaths from pneumonia, namely, Brown, Fayette, Rush, Union and Ripley. In the preceding month 413 deaths, 220 males, 193 females. In the same month last year, 400 deaths; 215 males, 185 females.

February, 1911.—The disease was reported in every county and deaths occurred in all but the following counties: Dekalb, Newton, Steuben, Brown, Union, Martin, and Scott. Total pneumonia deaths, 398. In the same month last year, 413. In the preceding month, 457.

March, 1911.—Three hundred and fifty-nine deaths; males 188, females 171. Twelve counties escaped deaths from pneumonia. In the preceding month, 398 deaths. In the same month last year, 461 deaths.

April, 1911.—Two hundred and eighty-seven deaths; males 164, females 123. Only 11 counties escaped having pneumonia deaths.

May, 1911.—Total deaths, 167; males 103, females 64. In the corresponding month last year, 183 deaths; males 112, females 71. Pneumonia deaths under 1 year of age, 26; 60 years and over, 25.

June, 1911.—Forty-eighth deaths; 22 males and 26 females. In the same month last year this disease caused 120 deaths, 60 males and 60 females. Pneumonia deaths under 1 year of age, 11; 50 years and over, 17.

July, 1911.—Pneumonia caused 56 deaths, 33 males and 23 females. In the same month last year this disease caused 50 deaths, 28 males and 22 females.

August, 1911.—Sixty-two deaths. In the previous month, 56 deaths. In the same month last year, 72 deaths.

September, 1911.—Seventy-six deaths; 42 males and 34 females. In the same month last year, 82 deaths; males 45, females 37. Pneumonia was eighteenth in prevalence this month.

October, 1911.—One hundred thirteen deaths; males 51, females 62. Same month last year, 143 deaths; males 76, females 67. Tenth in prevalence, and last year, same month, it was eleventh.

November, 1911.—One hundred ninety-eight deaths; 85 males and 113 females. In the same month last year, 296 deaths; 157

males and 139 females. In the preceding month there were 113 deaths. Pneumonia was fifth in area of prevalence this month.

December, 1911.- Two hundred seventy-five deaths; males 142, females 133. In the same month last year, 413 deaths; 220 males and 193 females.

TYPHOID FEVER.

Deaths by Months, with Average for Last Ten Years.

Months.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	Average.
January.....	66	61	36	511	39	72	50	40	55	44	97
February.....	37	53	55	35	29	57	49	21	33	42	41
March.....	41	55	62	34	40	48	49	38	36	36	43
April.....	45	45	61	26	32	38	38	34	36	47	40
May.....	31	39	55	33	39	42	32	36	28	31	36
June.....	28	42	58	43	29	30	32	37	28	28	36
July.....	88	64	70	57	52	58	63	80	45	78	65
August.....	176	120	107	121	96	145	93	119	126	109	121
September.....	237	193	138	203	155	141	121	144	128	91	155
October.....	225	165	167	154	168	133	150	162	168	99	159
November.....	155	104	137	101	148	84	121	110	126	77	116
December.....	38	72	67	65	86	75	87	54	65	54	66
Totals.....	1,217	1,013	1,013	1,383	913	933	885	875	934	736	944

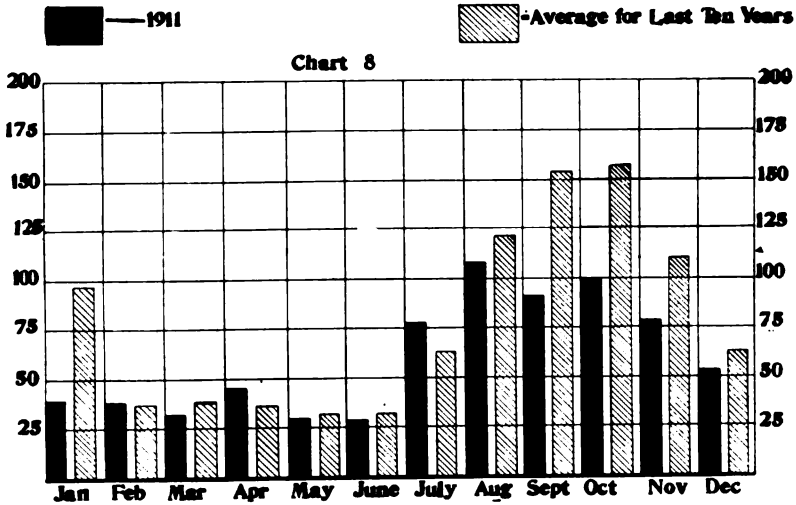
TYPHOID FEVER.

Deaths by Ages, with Average for Last Ten Years.

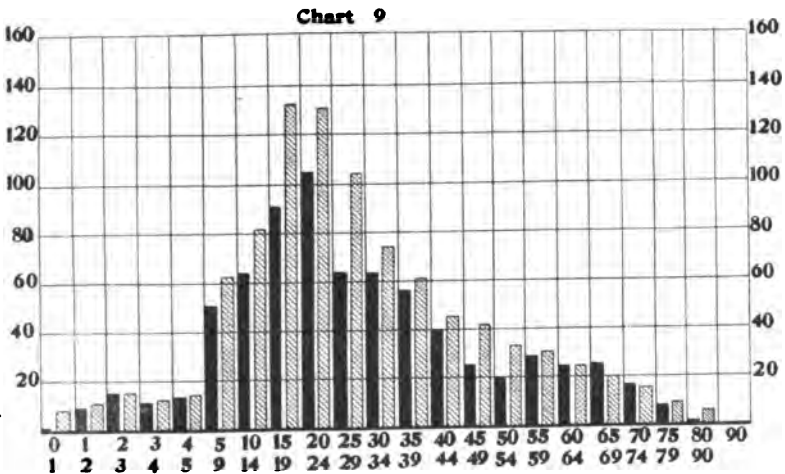
Ages.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	Average.
Under 1 year.....	9	4	16	11	12	8	11	9	6	1	8
1-2 years.....	15	13	11	14	11	7	10	10	12	9	11
2-3 years.....	29	12	18	16	13	13	19	15	12	16	16
3-4 years.....	19	17	8	11	19	13	19	10	12	11	13
4-5 years.....	20	16	16	18	18	10	12	11	18	14	15
5-9 years.....	77	77	74	72	65	58	45	64	62	50	64
10-14 years.....	98	102	82	74	85	92	72	82	74	65	82
15-19 years.....	167	160	133	125	138	145	105	141	125	92	133
20-24 years.....	169	136	137	136	120	126	131	102	138	106	130
25-29 years.....	139	102	89	94	94	94	96	90	90	64	95
30-34 years.....	117	62	73	64	76	79	76	74	74	63	75
35-39 years.....	69	62	73	45	62	67	57	55	71	57	61
40-44 years.....	73	49	47	49	34	46	45	37	47	40	46
45-49 years.....	58	45	49	46	37	41	40	36	45	25	42
50-54 years.....	37	33	45	32	36	32	41	34	39	20	34
55-59 years.....	31	35	37	31	22	24	28	32	37	28	30
60-64 years.....	22	18	42	30	18	28	28	24	11	24	24
65-69 years.....	25	21	22	20	16	16	17	20	13	25	20
70-74 years.....	21	19	18	19	10	17	15	9	19	17	16
75-79 years.....	13	12	10	9	15	10	11	8	14	8	11
80-89 years.....	4	11	7	8	8	5	4	10	9	1	6
90 years and over.....	1						1	2			1

TYPHOID FEVER DEATHS

BY MONTHS



BY AGES



MONTHLY ANALYSIS FOR TYPHOID FEVER.

(As Published in Monthly Bulletin.)

January, 1911.—One hundred fifteen cases in 35 counties with 39 deaths. In the corresponding month last year, 135 cases in 40 counties with 47 deaths.

February, 1911.—Ninety-four cases in 26 counties with 36 deaths. In the same month last year, 110 cases in 10 counties with 34 deaths. In the preceding month, 115 cases in 35 counties with 39 deaths.

March, 1911.—Ninety-one cases in 26 counties with 36 deaths. In the same month last year, 71 cases in 30 counties with 33 deaths. In the preceding month, 94 cases in 26 counties with 36 deaths.

April, 1911.—One hundred thirty-five cases in 26 counties with 40 deaths. In the same month last year, 112 cases in 32 counties with 32 deaths.

May, 1911.—One hundred thirty-four cases in 39 counties with 29 deaths. In the same month last year, 92 cases in 33 counties with 26 deaths. This disease was reported in the following counties: Allen, 12 cases; Blackford, 2; Cass, 1; Clark, 3; Clinton, 1; Crawford, 6; Daviess, 3; Dearborn, 1; Delaware, 3; Floyd, 9; Franklin, 2; Gibson, 1; Grant, 1; Hendricks, 1; Howard, 2; Jefferson, 3; Johnson, 12; Kosciusko, 1; Laporte, 1; Madison, 4; Marion, 15; Miami, 1; Montgomery, 1; Morgan, 1; Noble, 1; Orange, 2; Parke, 13; Putnam, 3; Ripley, 1; Shelby, 6; St. Joseph, 9; Tippecanoe, 1; Vanderburgh, 2; Vigo, 2; Wabash, 1; Warrick, 2; Washington, 5; Wayne, 1; Whitley, 2.

June, 1911.—One hundred thirty-eight cases in 42 counties with 29 deaths. In the corresponding month last year, 91 cases in 31 counties with 27 deaths.

July, 1911.—Two hundred ninety-six cases reported in 59 counties with 72 deaths. In the same month last year, 246 cases were reported in 47 counties with 45 deaths. The disease prevailed unusually in the following counties: Allen, 20 cases; Knox, 14 cases; Marion, 26 cases; Parke, 14 cases; St. Joseph, 28 cases; Washington, 25 cases.

August, 1911.—Five hundred twenty-four cases reported. The disease was reported from every county in the State except Benton, Carroll, Clinton, Franklin, Ohio, Rush, Starke, Sullivan and Vermillion. Although not reported, it is hardly possible the disease was not present in the counties named. The typhoid deaths for the whole month were 102. In the corresponding month last

year, 123. The disease prevailed unusually in the following counties: Blackford, 10 cases; Harrison, 10; Huntington, 15; Jackson, 13; Jefferson, 15; Knox, 14; Marion, 64; St. Joseph, 20; Vanderburgh, 20; Vigo, 16; Washington, 20; Wayne, 17.

September, 1911.—Four hundred fifty cases reported from 78 counties with 86 deaths. In the same month last year 800 cases in 81 counties with 158 deaths. In the preceding month, 524 cases in 84 counties, with 102 deaths.

October, 1911.—Six hundred forty-two cases in 72 counties with 91 deaths. Same month last year, 701 cases in 78 counties with 159 deaths. In preceding month, 800 cases in 81 counties with 158 deaths.

November, 1911.—Two hundred fifty-one cases reported from 56 counties with 74 deaths. In the same month last year there were 115 deaths. In the preceding month, 442 cases in 67 counties with 91 deaths.

December, 1911.—One hundred sixty-eight cases reported in 50 counties with 50 deaths. In the same month last year, 236 cases in 47 counties with 61 deaths. In the preceding month, 251 cases in 56 counties with 74 deaths.

DIPHTHERIA.

Deaths by Months, with Average for Last Ten Years.

MONTHS.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	Average.
January.....	49	61	51	32	33	43	42	38	42	40	43
February.....	35	49	35	31	23	41	28	24	19	31	31
March.....	32	27	29	27	26	35	24	18	32	22	27
April.....	27	22	32	13	16	27	12	10	15	17	19
May.....	30	12	22	13	8	20	12	5	15	9	14
June.....	16	16	18	8	12	10	8	3	18	18	12
July.....	7	15	10	16	11	15	11	8	11	13	11
August.....	21	23	12	15	13	20	12	19	24	13	17
September.....	39	35	11	34	36	35	32	26	28	32	30
October.....	48	69	21	82	77	36	43	35	52	78	55
November.....	63	77	35	41	82	37	47	57	79	54	57
December.....	57	56	38	54	65	34	44	55	46	47	49
Totals.....	424	462	314	366	402	353	315	338	381	374	372

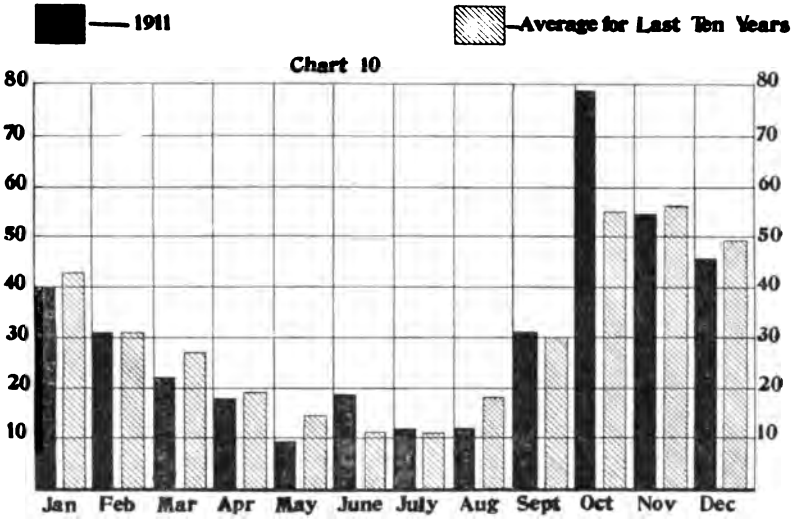
DIPHTHERIA.

Deaths by Ages, with Average for Last Ten Years.

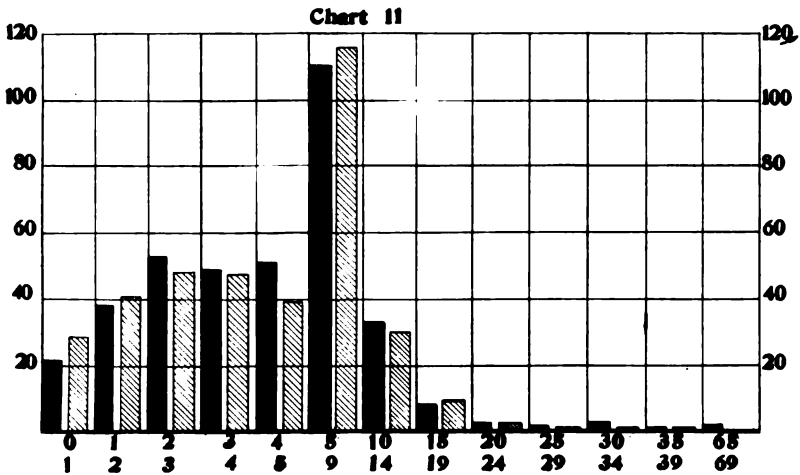
AGES.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	Average.
Under 1 year.....	51	50	28	23	26	20	21	21	28	21	28
1-2 years.....	36	59	47	35	45	34	43	31	44	38	41
2-3 years.....	61	56	33	48	51	35	54	52	43	53	48
3-4 years.....	39	64	46	53	47	51	36	46	42	49	47
4-5 years.....	45	46	22	41	58	30	23	40	43	51	39
5-9 years.....	122	141	99	114	124	127	90	117	119	110	116
10-14 years.....	46	28	26	28	35	32	23	28	35	34	31
15-19 years.....	14	9	5	10	10	7	9	7	14	7	9
20-24 years.....	1	3	1	7	1	8	3	5	4	3	3
25-29 years.....	1	.....	1	3	.....	3	3	.....	4	2	1
30-34 years.....	1	2	1	1	.....	1	4	.....	1	3	1
35-39 years.....	.....	.....	1	1	1	2	3	1	1	1	1
40-44 years.....	1	.....	.....	.....	2	2	.....	.....	1	.....	.....
45-49 years.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
50-54 years.....	.....	.....	1	.....	1	.....	.....	.....	1	.....	.....
55-59 years.....	.....	1	.....	2	.....	1	1	.....	.....	.....	.....
60-64 years.....	1	.....	.....	.....	.....	1	.....	.....	1	.....	.....
65-69 years.....	.....	1	.....	.....	.....	.....	.....	.....	.....	2	.....
70-79 years.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals.....	419	461	311	366	401	354	314	348	381	374	372

DIPHTHERIA DEATHS

BY MONTHS



BY AGES



MONTHLY ANALYSIS FOR DIPHTHERIA DEATHS.

(As Published in Monthly Bulletin.)

January, 1911.—Two hundred seventy-nine cases with 35 deaths in 51 counties. In the preceding month, 127 cases in 15 counties with 44 deaths.

February, 1911.—One hundred eighty-seven cases in 38 counties with 31 deaths. In the same month last year, 168 cases in 48 counties with 17 deaths. In the preceding month, 279 cases with 35 deaths in 51 counties.

March, 1911.—Two hundred nine cases, with 21 deaths in 34 counties. In the preceding month, 187 cases in 38 counties with 31 deaths. In the same month last year, 120 cases in 38 counties with 29 deaths.

April, 1911.—One hundred four cases reported in 24 counties with 15 deaths. In the same month last year, 109 cases in 28 counties with 13 deaths.

May, 1911.—One hundred forty-five cases in 28 counties with 9 deaths. In the same month last year, 102 cases in 29 counties with 14 deaths.

June, 1911.—One hundred forty-nine cases reported in 28 counties with 18 deaths. In the same month last year, 90 cases in 50 counties with 15 deaths.

July, 1911.—Deaths from diphtheria numbered 10. In the same month last year, 9.

August, 1911.—One hundred thirty-five cases reported in 34 counties with 12 deaths. In same month last year, 193 cases in 34 counties with 23 deaths.

September, 1911.—Two hundred sixty-seven cases reported in 40 counties with 29 deaths. In the same month last year, 281 cases in 41 counties with 27 deaths. In September it was eighth in area of prevalence.

October, 1911.—Two thousand four hundred thirty-seven cases in 69 counties with 68 deaths. Same month last year, 441 cases in 52 counties with 46 deaths. Epidemic in following counties: Allen, Bartholomew, Clay, Decatur, Jefferson, Knox, Lake, Madison, Marion, Monroe, Montgomery, Newton, Pike, Putnam, St. Joseph, Vanderburgh and Vigo.

November, 1911.—Seven hundred thirty-five cases reported in 57 counties with 47 deaths. In the same month last year, 544 cases

in 65 counties with 70 deaths. In the preceding month, 2,437 cases in 56 counties with 68 deaths. In November diphtheria was first in area of prevalence.

December, 1911.—Three hundred twenty-eight cases reported from 49 counties with 48 deaths. In the same month last year, 177 cases in 51 counties with 44 deaths. In the preceding month, 735 cases in 57 counties with 47 deaths.

SCARLET FEVER.

Deaths by Months, with Average for the Last Ten Years.

Months.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	Average.
January.....	22	22	24	18	11	6	13	11	16	26	16
February.....	19	13	24	11	9	9	17	11	33	19	16
March.....	18	10	33	20	12	18	10	7	26	33	18
April.....	11	9	22	21	7	9	15	11	21	23	14
May.....	5	4	15	11	7	5	5	14	21	17	10
June.....	3	6	9	4	10	3	5	9	13	12	7
July.....	6	13	4	14	7	10	4	9	11	5	8
August.....	6	8	6	6	3	5	1	6	11	4	5
September.....	8	13	7	5	6	3	6	8	8	10	7
October.....	19	16	12	5	8	7	4	21	11	7	11
November.....	24	18	17	11	14	8	5	19	21	5	14
December.....	9	34	19	7	7	8	10	25	13	11	14
Totals.....	150	166	192	133	101	91	95	151	205	179	146

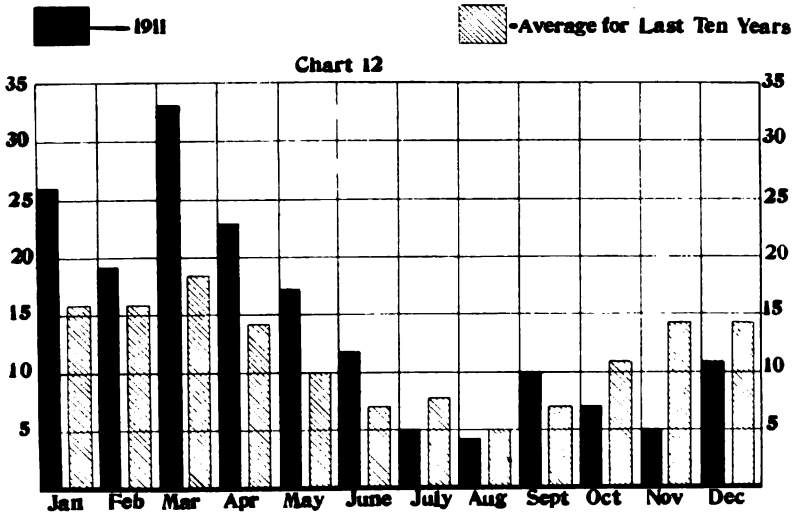
SCARLET FEVER.

Deaths by Ages, with Average for the Last Ten Years.

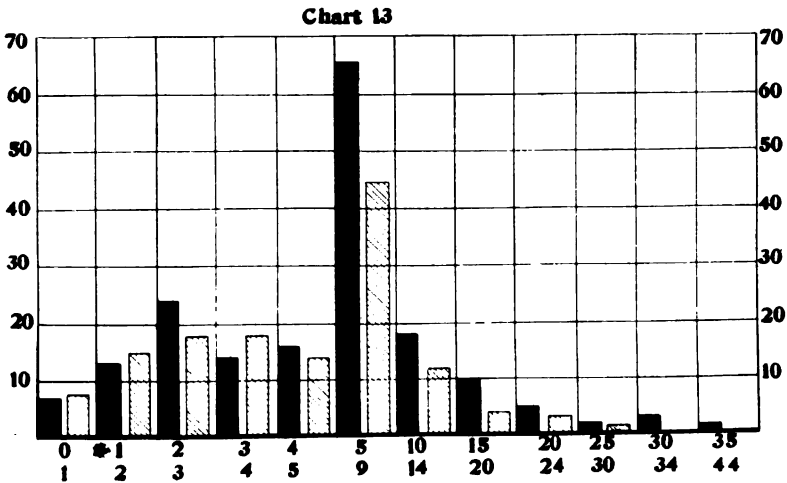
Ages.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	Average.
Under 1 year.....	11	13	13	10	5	4	4	9	13	7	8
1-2 years.....	13	9	27	18	13	7	8	22	24	13	15
2-3 years.....	17	17	33	20	10	15	17	15	21	24	18
3-4 years.....	24	22	25	17	15	13	12	20	23	14	18
4-5 years.....	14	19	18	14	10	7	10	15	19	16	14
5-9 years.....	43	55	61	38	27	31	22	53	61	66	45
10-14 years.....	14	19	11	11	8	8	9	11	20	18	12
15-20 years.....	3	3	2	1	2	5	5	3	10	10	4
20-24 years.....	3	3	1	1	10	.....	2	1	7	5	3
25-30 years.....	1	.....	.....	2	.....	1	4	.....	4	2	1
30-34 years.....	1	1	.....	.....	1	.....	2	1	.....	3	.....
35-44 years.....	.....	1	.....	.....	.....	.....	.....	1	1	1	.....
45-54 years.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....
55-90 years.....	.....	1	.....	.....	.....	.....	.....	.....	2	.....	.....

SCARLET FEVER DEATHS

BY MONTHS



BY AGES



DIARRHOEAL DISEASES.

UNDER TWO YEARS OF AGE.

Deaths by Months, with Average for the Last Ten Years.

MONTHS.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	Average.
January.....	15	11	29	26	28	34	39	34	45	54	31
February.....	14	22	30	30	25	32	33	46	30	42	30
March.....	14	20	33	36	29	35	34	57	39	52	35
April.....	21	17	24	22	39	18	48	39	45	52	32
May.....	29	25	29	35	42	35	39	46	63	57	40
June.....	116	83	54	116	71	81	89	185	128	141	104
July.....	455	323	307	359	321	396	322	460	491	357	379
August.....	569	475	498	469	484	503	420	441	528	285	467
September.....	337	275	344	343	447	280	292	304	356	360	323
October.....	130	140	204	186	232	160	204	146	203	208	181
November.....	56	36	49	54	66	40	83	50	72	75	58
December.....	23	22	28	24	39	25	32	53	49	46	34
Totals.....	1,779	1,449	1,629	1,700	1,823	1,639	1,635	1,841	2,049	1,629	1,717

TWO YEARS OF AGE AND OVER.

Deaths by Months, with Average for the Last Ten Years.

MONTHS.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	Average.
January.....	25	24	30	32	26	40	38	30	36	20	30
February.....	23	20	38	29	36	33	26	28	20	27	28
March.....	28	27	37	42	35	41	35	37	28	29	33
April.....	28	23	28	27	41	38	28	22	24	32	33
May.....	30	40	33	28	30	29	43	38	29	23	32
June.....	25	36	30	44	29	63	57	46	34	55	41
July.....	129	93	73	87	78	150	116	35	99	66	92
August.....	170	131	110	152	119	203	165	105	146	70	137
September.....	86	116	104	94	130	122	143	76	83	51	100
October.....	59	64	63	67	92	62	88	34	62	48	63
November.....	39	26	32	28	39	42	50	35	28	31	35
December.....	27	22	33	28	40	24	28	27	31	40	30
Totals.....	669	622	611	658	695	847	817	563	620	492	659

DIARRHOEAL DISEASES

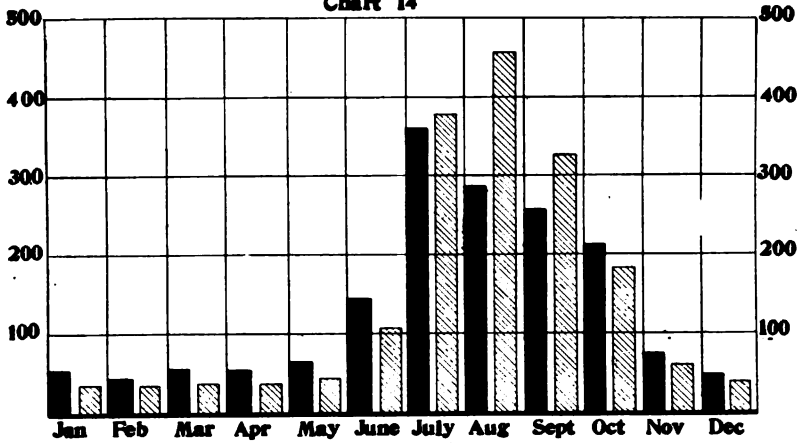
BY MONTHS

— 1911

▨ -Average for Last Ten Years

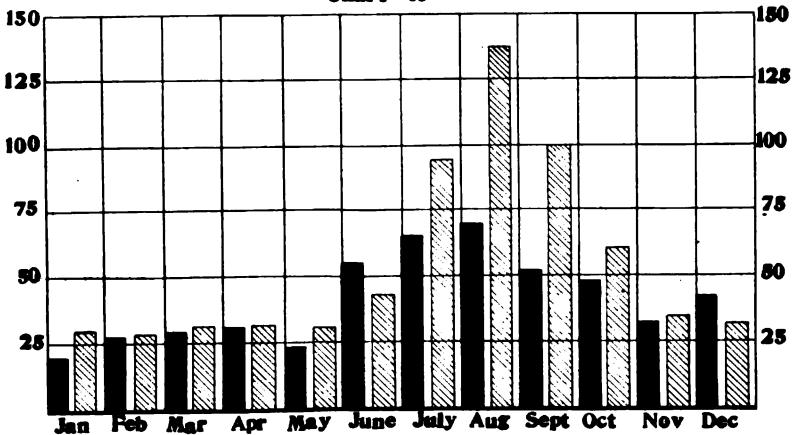
Under two years of age

Chart 14



Two years and over

Chart 15



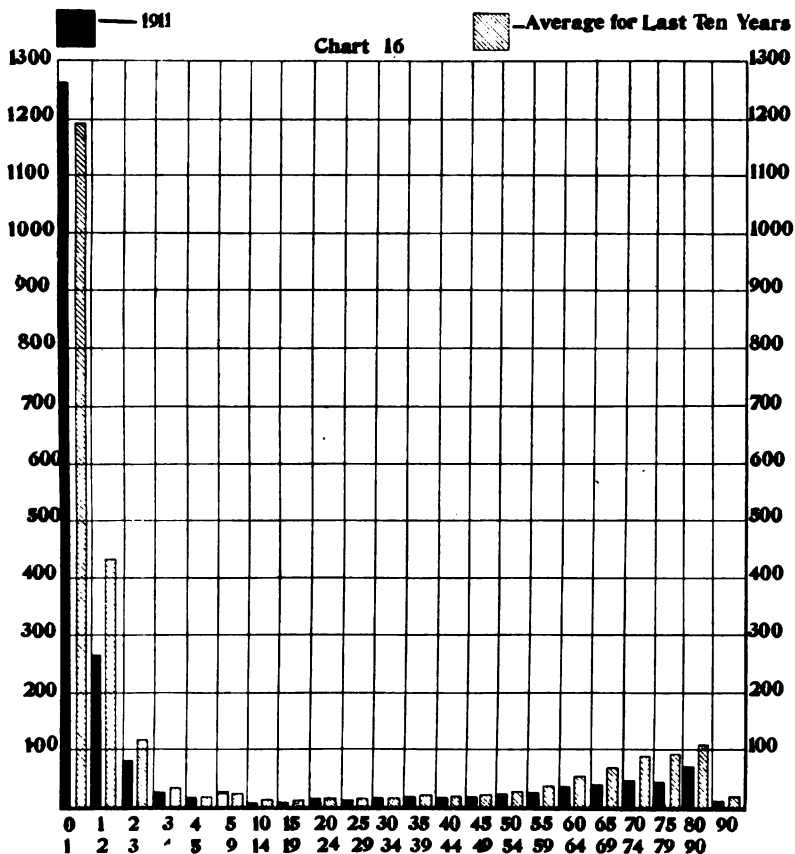
DIARRHOEAL DISEASES.

Deaths by Ages, with Average for the Last Ten Years.

AGES.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	Aver- age.
Under 1 year.....	1,070	894	1,068	1,115	1,240	1,202	1,202	1,340	1,576	1,280	1,196
1-2 years.....	533	421	384	406	417	437	433	501	473	389	437
2-3 years.....	140	110	112	130	116	105	126	125	140	82	118
3-4 years.....	34	19	40	36	31	33	34	25	37	22	31
4-5 years.....	13	11	21	13	20	11	16	18	13	13	14
5-9 years.....	23	12	31	29	17	19	16	19	22	23	21
10-14 years.....	8	11	13	10	6	12	6	7	9	4	8
15-19 years.....	7	6	4	8	8	4	3	5	9	4	5
20-24 years.....	14	9	15	17	12	16	14	8	8	9	12
25-29 years.....	15	12	13	16	21	7	14	11	3	6	11
30-34 years.....	12	20	14	10	10	10	11	14	17	11	11
35-39 years.....	28	14	15	22	17	20	13	11	10	13	16
40-44 years.....	14	15	19	20	19	13	12	20	11	11	15
45-49 years.....	20	24	19	13	14	13	19	17	15	14	16
50-54 years.....	30	36	33	25	30	30	20	29	18	19	26
55-59 years.....	57	37	37	51	37	35	46	19	16	21	35
60-64 years.....	60	45	57	72	59	61	45	42	37	34	51
65-69 years.....	73	67	68	68	90	78	78	98	50	37	70
70-74 years.....	80	98	88	93	99	97	81	92	61	45	83
75-79 years.....	98	91	88	95	107	117	103	132	66	43	94
80-90 years.....	102	94	89	104	124	141	132	148	66	71	108
90 years and over.....	11	14	12	13	18	20	22	33	17	10	16

DIARRHOEAL DISEASES

BY AGES



INFLUENZA.

Deaths by Months, with Average for the Last Ten Years.

Months.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	Average.
January.....	80	31	45	114	53	71	172	54	88	149	83
February.....	84	51	90	221	44	159	316	77	144	172	135
March.....	51	87	146	151	48	234	167	126	201	154	136
April.....	37	60	70	37	30	51	70	135	97	90	67
May.....	15	37	20	15	7	52	40	42	35	19	28
June.....	4	10	7	7	2	14	13	9	10	3	7
July.....	8	7	2	5	4	7	9	9	12	1	6
August.....	3	9	5	.....	2	4	14	4	4	4	4
September.....	7	3	1	4	3	4	5	7	3	.....	3
October.....	8	7	4	4	8	2	4	4	10	7	5
November.....	8	10	18	12	11	17	22	10	22	23	15
December.....	17	36	26	21	12	51	35	27	75	37	33
Totals.....	302	348	434	591	224	666	867	504	701	659	529

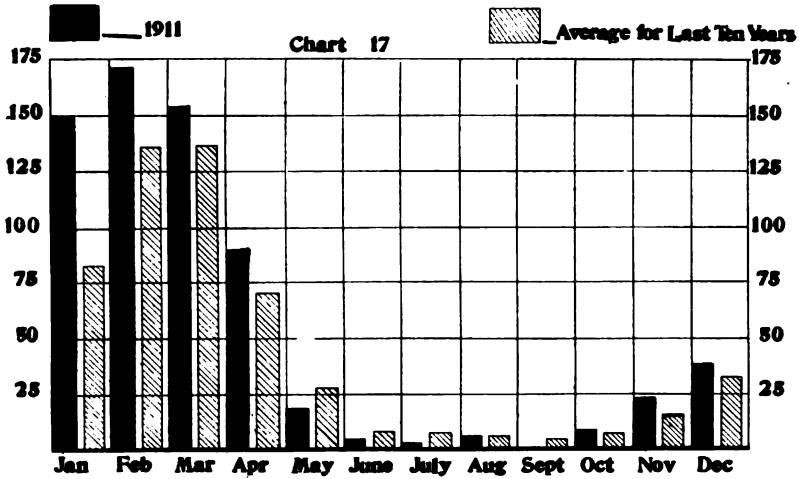
INFLUENZA.

Deaths by Ages, with Average for the Last Ten Years.

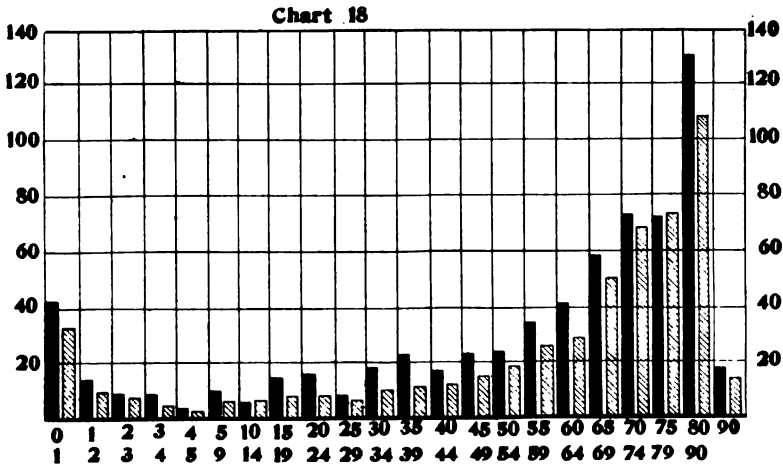
Ages.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	Average.
Under 1 year.....	47	13	32	43	14	26	32	48	46	42	34
1-2 years.....	7	3	4	10	3	12	11	11	18	15	9
2-3 years.....	4	3	1	6	5	5	10	5	14	8	6
3-4 years.....	4	2	4	.....	.....	3	6	4	3	7	3
4-5 years.....	4	2	.....	1	2	.....	1	2	4	2	1
5-9 years.....	9	2	3	5	2	4	10	2	9	10	5
10-14 years.....	4	6	7	4	3	6	10	9	6	4	5
15-19 years.....	3	3	6	7	4	11	16	7	9	15	8
20-24 years.....	4	4	3	16	3	11	13	6	13	16	8
25-29 years.....	2	5	8	3	.....	5	11	9	16	8	6
30-34 years.....	2	5	7	9	2	18	15	.....	16	18	9
35-39 years.....	6	5	7	9	4	14	24	9	15	22	11
40-44 years.....	1	6	6	16	3	9	21	10	22	17	11
45-49 years.....	6	7	13	14	10	23	30	8	23	22	15
50-54 years.....	12	16	9	17	13	26	37	14	26	23	19
55-59 years.....	14	16	19	32	6	38	34	35	38	36	26
60-64 years.....	5	28	22	40	11	24	50	29	34	41	28
65-69 years.....	35	27	37	47	24	73	86	46	69	59	50
70-74 years.....	35	53	73	67	31	94	115	52	87	74	68
75-79 years.....	39	58	61	86	31	89	131	80	96	72	74
80-90 years.....	51	74	94	132	43	151	182	103	122	130	108
90 years and over.....	7	9	15	23	8	23	21	15	19	18	15

INFLUENZA DEATHS

BY MONTHS



BY AGES



MEASLES.

Deaths by Months, with Average for the Last Ten Years.

MONTHS.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	Average.
January	2		28		2	7	8	5	21	19	9
February	5	4	31	1	2	10	57	15	62	32	21
March	26	6	52			28	52	23	102	61	35
April	5	12	50	2	7	40	47	41	83	92	37
May	14	10	29		4	51	24	27	87	44	29
June	4	7	9	1	3	31	11	14	41	14	13
July	7	4	6			23	2	13	22	9	8
August	5	3	3	1	1	5	2	9	18	4	5
September		6	2			2	1	3	3	3	2
October		4	2			4	4		5	1	2
November		6		1	2	3		3	9		2
December	1	11			2	9	1	3	9	1	3
Totals	69	73	212	6	23	213	203	156	462	280	170

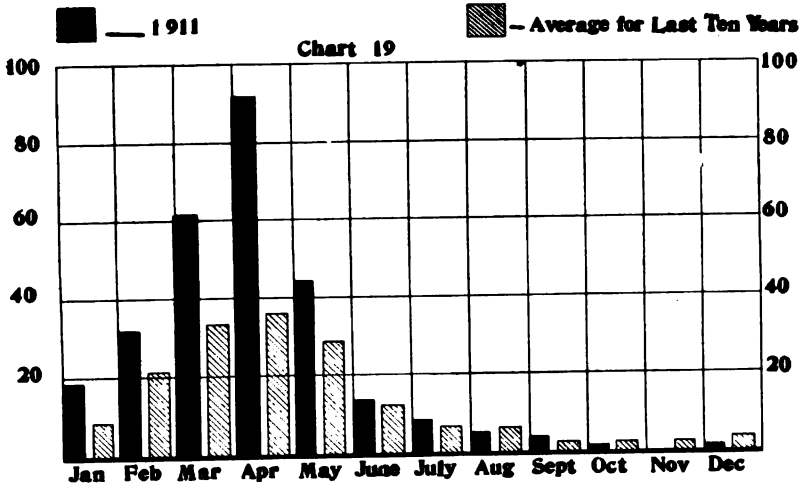
MEASLES.

Deaths by Ages, with Average for the Last Ten Years.

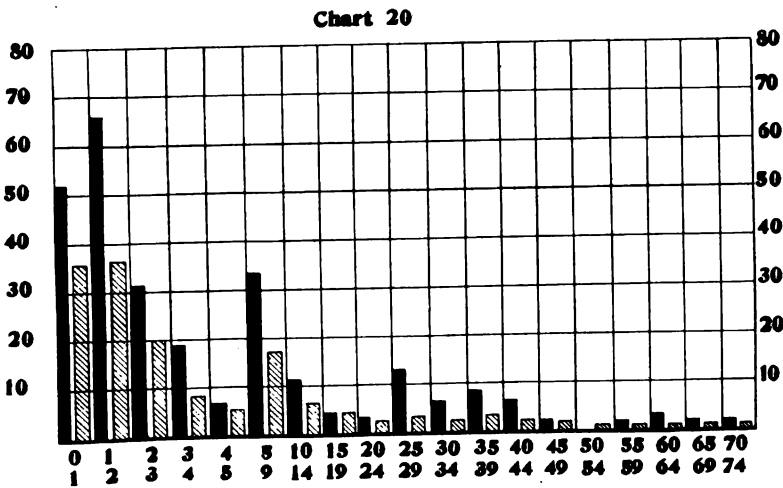
Ages.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	Average.
Under 1 year	28	17	65	3	5	49	50	27	73	52	36
1-2 years	11	19	27		9	55	29	39	116	66	37
2-3 years	6	6	26	1	1	30	13	19	69	31	20
3-4 years	2	3	7			9	14	9	32	19	9
4-5 years	3	2	10		1	6	8	7	17	7	6
5-9 years	5	3	13		1	20	26	20	49	34	17
10-14 years		3	10			6	9	9	24	11	7
15-19 years	3	5	9		1	7	16	2	10	5	5
20-24 years	2	2	6		1	3	5	5	10	4	3
25-29 years	1	4	1		1	6	8	6	9	13	4
30-34 years	3	1	5		2	1	4	2	14	7	3
35-39 years		1	11		1	6	7	2	10	9	4
40-44 years	2	1	7			4	5	5	7	7	3
45-49 years	1	1	6			2	3	2	7	2	2
50-54 years	2	3	2	1		2	5	2	1		1
55-59 years									8	2	1
60-64 years			1			3			2	4	1
65-69 years	4	1	1			1	1		1	4	1
70-74 years	1		1				3		2	3	1
75-79 years			2			2	1		2		
80-89 years			2			1					
90 years and over	1	1									

MEASLES DEATHS

BY MONTHS



BY AGES



SMALLPOX.

Table Giving Number of Deaths by Months for the Last Ten Years.

Months.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	Total.	Average.
January.....	4	51	8	7	.....	3	.....	.....	.....	.....	73	7
February.....	2	55	5	11	.....	2	1	.....	1	.....	77	7
March.....	3	31	3	3	.....	.....	2	.....	.....	2	44	4
April.....	8	21	6	3	1	1	2	1	.....	.....	43	4
May.....	1	10	7	3	.....	1	.....	1	.....	.....	23	2
June.....	2	3	3	4	.....	1	3	.....	.....	1	17	1
July.....	15	4	6	3	1	.....	.....	2	.....	.....	31	3
August.....	1	14	3	.....	.....	.....	.....	.....	.....	.....	18	1
September.....	7	2	17	.....	2	.....	.....	.....	.....	.....	28	2
October.....	10	.....	18	.....	3	.....	.....	.....	.....	.....	31	3
November.....	4	1	13	.....	.....	.....	.....	1	.....	.....	19	1
December.....	18	3	8	1	1	.....	2	.....	.....	.....	33	3
Totals.....	75	195	97	35	8	8	10	5	1	3	437	43

MONTHLY ANALYSIS FOR SMALLPOX DEATHS.

(As Published in Monthly Bulletin.)

January, 1911.—One hundred fifty-five cases in 12 counties with no deaths. Cass County, 4; Decatur, 2; Jennings, 6; Knox, 2; Madison, 100; Monroe, 1; Montgomery, 5; Noble, 1; Posey, 1; Steuben, 2; Vigo, 19; Wayne, 12.

February, 1911.—Ninety-nine cases in 20 counties with no deaths. In the same month last year, 183 cases in 23 counties with 1 death. Counties reporting the disease were: Adams, 6 cases; Allen, 1; Blackford, 3; Cass, 2; Clay, 8; Daviess, 1; Decatur, 1; Dekalb, 4; Delaware, 6; Grant, 1; Huntington, 1; Knox, 5; Madison, 36; Montgomery, 6; Steuben, 5; St. Joseph, 1; Vigo, 3; Wabash, 1; Warren, 1; Wayne, 7.

March, 1911.—One hundred seventeen cases in 21 counties with 2 deaths. Cass, 11; Clark, 9; Clay, 1; Delaware, 2; Fountain, 2; Howard, 8; Huntington, 3; Knox, 3; Lake, 1; Madison, 13; Marion, 1; Monroe, 1; Montgomery, 3; Shelby, 25; St. Joseph, 4; Sullivan, 1; Tippecanoc, 1; Vigo, 1; Wabash, 17; Warren, 1; Wayne, 6; Wells, 3.

April, 1911.—Two hundred and two cases in 28 counties with no deaths. In the same month last year, 81 cases in 18 counties with no deaths. The counties reporting smallpox were: Allen, 4; Benton, 1; Blackford, 18; Cass, 12; Clark, 12; Clay, 2; Decatur, 1; Delaware, 11; Floyd, 4; Fountain, 1; Howard, 40; Huntington, 1; Jay, 1; Laporte, 5; Madison, 18; Marion, 3; Miami, 1; Posey, 1;

Pulaski, 1; Shelby, 40; St. Joseph, 3; Sullivan, 2; Tipton, 7; Vermillion, 3; Vigo, 1; Wayne, 3; Wells, 4; White, 2.

May, 1911.—Two hundred and seven cases in 22 counties with no deaths. In the same month last year, 89 cases in 14 counties with no deaths. The following counties reported the disease present: Allen, 3 cases; Bartholomew, 13; Benton, 10; Cass, 13; Clay, 4; Floyd, 3; Grant, 7; Howard, 56; Laporte, 3; Madison, 7; Marion, 2; Marshall, 11; Parke, 10; Posey, 4; Shelby, 5; St. Joseph, 2; Tipton, 1; Vanderburgh, 15; Vigo, 1; Wabash, 3; Wayne, 34; Wells, 1.

June, 1911.—Ninety cases were reported from 16 counties with 1 death. In the corresponding month last year, 75 cases from 23 counties with no deaths. The following counties reported the disease present: Allen, 1; Benton, 2; Blackford, 4; Clinton, 7; Delaware, 12; Howard, 14; Jay, 2; Laporte, 2; Madison, 16; Marion, 3; Parke, 1; Posey, 3; Shelby, 3; Tipton, 5; Vanderburgh, 1; Wabash, 2; Wayne, 12.

July, 1911.—Forty-four cases in 11 counties with no deaths. The following counties reported the disease present: Bartholomew, 1; Clark, 2; Franklin, 1; Henry, 1; Howard, 16; Madison, 2; Marion, 1; Parke, 2; Tippecanoe, 2; Vigo, 7.

August, 1911.—Thirty-one cases reported in 13 counties with no deaths. In the same month last year, 6 cases in 3 counties with no deaths.

September, 1911.—Twenty-one cases in 4 counties with no deaths. In the same month last year, 1 case in 1 county with no deaths.

October, 1911.—Thirteen cases in 5 counties with no deaths. Same month last year, 2 cases in 2 counties, no deaths. Counties reporting the disease were: Adams, 3 cases; Dearborn, 1; Howard, 1; Miami, 7; Randolph, 1.

November, 1911.—Thirty-seven cases reported in 8 counties with no deaths. In the same month last year, 53 cases in 4 counties with no deaths. Counties reporting the disease were: Adams, 1; Dearborn, 5; Delaware, 1; Howard, 12; Marion, 2; Miami, 10; Ohio, 4; Randolph, 1; Wayne, 1.

December, 1911.—One hundred and thirteen cases in 10 counties with no deaths. In the same month last year, 45 cases in 7 counties with no deaths. Counties reporting the disease were: Adams, 75; Bartholomew, 3; Cass, 1; Dearborn, 13; Delaware, 1; Howard, 5; Ohio, 7; Randolph, 1; Vanderburgh, 1; Vigo, 2.

VIOLENCE.

	1908.	1909.	1910.	1911.
January	212	198	197	214
February	172	181	179	180
March	174	215	263	165
April	186	197	200	199
May	242	195	188	267
June	223	217	243	221
July	234	228	273	325
August	251	266	251	278
September	244	205	241	219
October	209	220	207	226
November	196	200	214	226
December	184	221	234	215
Totals	2,527	2,543	2,690	2,735
	1908.	1909.	1910.	1911.
Accidents	2,021	2,030	1,902	2,081
Suicides	384	404	386	443
Homicides	122	109	121	123
Mob violence .....	...	...	...	...

MONTHLY RECORD OF VIOLENCE DEATHS.

(As Published in Monthly Bulletin.)

January, 1911.—Number of deaths, 189. In the same month last year, 165. Of the deaths by violence there were 12 murders, 34 suicides, 143 accidents. Of the murders, 6 males and 1 female were killed by gunshot; 2 males were killed by blunt instruments; 2 males killed by cutting and stabbing; 1 male (infant) killed by exposure to cold. Of the suicides, 27 were males and 7 females. The methods chosen were: Shooting, 6 males, 1 female; hanging, 7 males; drowning, 1 male and 1 female; artificial gas, 1 male; carbolic acid, 3 males, 1 female; other poisons, 5 males, 4 females; cutting, 2 males; opium, 2 males. Of the accidental deaths, steam railroads caused 37; interurban railroads, 3; street cars, 2; crushing injuries caused 19 deaths; machinery, 2; mines, 3; burns and scalds, 27; falls, 20; gunshot, 4; electricity, 1; horses and vehicles, 3; various poisons, 4; drowning, 2; asphyxiation, 7, and the remainder by various means.

February, 1911.—One hundred sixty-eight deaths from violence. In the same month last year, 139 deaths. Of the violence deaths in February, 9 were murders, 7 males and 2 females; 24

were suicides, 14 males and 10 females; 127 accidental, 94 males and 33 females. Of the murders, 3 males and 1 female were accomplished by gunshots, 1 male by cutting throat, 3 males and 1 female by blows. Of the suicides, 8 were by gunshots, 8 by hanging, 2 by cutting throat, 2 by burning, 7 by carbolic acid, 1 by illuminating gas, 3 by other poisons. Of the accidental deaths, steam railroads caused 23, street cars, 2; automobiles, 1; fracture and crushing injuries, 17; machinery, 3; mining, 1; falls, 14; burns and scalds, 21; drowning, 6; gunshot, 3; horses and vehicles, 6; various poisons, 5; the remainder by various methods.

March, 1911.—Number of deaths, 152. In the same month last year, 221. Of the deaths by violence, there were 10 murders, 29 suicides, 113 accidental deaths. Of the murders, 6 males and 2 females were killed by gunshots; 2 homicides not given. Of the suicides, 25 were males and 5 females. The methods chosen were: Gunshots, 8 males; drowning, 2 males, 1 female; hanging, 2 males; carbolic acid, 9 males and 2 females; concentrated lye, 1 male, 1 female; strychnine, 2 males; jumping in front of train, 1 male.

Of the accidental deaths, steam railroads caused 24; interurbans, 1; street cars, 4; automobiles, 6; fracture of skull, 2; fracture of femur, 3; fracture of other bones, 1; crushing injuries, 4; machinery, 2; mining, 6; falls, 16; burns and scalds, 19; drowning, 2; gunshots, 5; horses and vehicles, 7; electricity, 2; strangulation, 1; asphyxiation and suffocation, 3; carbolic acid and other poisons, 2; tetanus, 1; not named injury, 1.

April, 1911.—Number of deaths from violence, 173. In the same month last year, 175. Of the violence deaths, 5 were murders, 37 suicides and the remainder accidents. Of the murders, 4 were committed with gunshot, 1 with blunt instrument. Of the suicides, 8 were by gunshots; 7 by hanging; drowning, 4; cutting, 2; carbolic acid, 8; strychnine, 3; other poisons, 2; artificial gas, 1; stepping in front of railroad trains, 2. Of the accidental deaths, railroads caused 27; interurbans, 1; street cars, 3; motorcycle, 1; crushing injuries, 15; burns and scalds, 17; drowning, 3; gunshots, 3; asphyxiation, 3; falls, 33; strangulation, 2; horses and vehicles, 6; poisons, 6; electricity, 4; and the remainder by various means.

May, 1911.—Deaths numbered 230. Murders, 7; suicides, 45; accidents, 178. Of the murders, 4 were by gunshot, 1 by cutting, 2 by explosion. Of the suicides, 9 were by gunshot; 8 hanging; 7 drowning; 3 cutting throat; 5 carbolic acid; 2 morphine; 7 poisons of different kinds; burning, 1; stepping in front of street

car, 1; jumping from a height, 1; not named, 1. Of the accidental deaths, steam railroads caused 32; interurbans, 3; street cars, 1; automobiles, 7; crushing injuries, 17; mining, 2; machinery, 1; burns and scalds, 13; drowning, 30; falls, 19; gunshots, 3; animals and vehicles, 14; electricity, 2; lightning, 4; and the remainder by various means.

June, 1911.—Deaths from violence numbered 195. Murders, 4; suicides, 32; accidents, 159. Of the murders, 3 were by gunshot, 1 by cutting. Of the suicides, 11 were by gunshots, 9 by hanging, 3 by drowning, 6 by carbolic acid, 1 by strychnine, 1 by strangulation. Of the accidental deaths, steam railroads caused 37; interurbans, 2; street cars, 4; automobiles, 2; motorcycle, 1; crushing injuries, 16; drowning, 27; vehicles, 7; lightning, 5; heat prostration, 3; electricity, 2.

July, 1911.—Two hundred ninety-six deaths from violence. In the corresponding month last year, 234. Of the 296 violent deaths, 13 were murders, 32 suicides, 251 accidental deaths. Of the accidental deaths, 37 were by steam railroad, 1 by interurban, 3 by street cars, 1 by automobile, 2 by motorcycle, 51 by drowning, 31 by accidental falls.

August, 1911.—Two hundred sixty-one deaths. In the corresponding month last year, 237. Murders numbered 14; suicides, 46, and the remainder accidental. Of the murders, 11 were caused by gunshots, 3 struck by an ax, and 1 stabbed to death. Of the suicides, 10 chose gunshots, 8 hanging, 3 drowning, 1 cutting throat, 1 stepping in front of train, 12 carbolic acid, 5 rough on rats, 2 strychnine, 2 morphine, 2 other poisons. Of the accidental deaths, railroads caused 47; interurbans, 4; automobiles, 4; motorcycle, 1; machinery, 3; mining, 1; electricity, 4; falls, 31; fractures, 10; burns and scalds, 11; gunshots, 6; burns, 24; poisons of various kinds, 5; horses and vehicles, 14; suffocation and asphyxiation, 6; lightning, 3; and the remainder by various means.

September, 1911.—Two hundred and two deaths. In the corresponding month last year, 232. In the preceding month, 261. The murders numbered 9; 6 males, 3 females. Eight murders were caused by gunshots and 1 by drowning. Suicides numbered 37; 26 males and 11 females. Methods used were: Gunshots, 9; hanging, 7; drowning, 5; cutting, 1; carbolic acid, 9; strychnine, 2; artificial gas, 1. Accidental deaths, 166; steam railroads caused 30; interurbans, 6; street cars, 2; automobiles, 3; motorcycles, 1; machinery, 1; mining, 3; electricity, 9; falls, 34; crushing injuries, 15;

burns and scalds, 10; gunshots, 7; drowning, 10; horses and vehicles, 10; poisons, 3. The remainder by various methods.

October, 1911.—Two hundred and five deaths, rate 89.3 per 100,000. Same month last year, 202 deaths; rate, 89.3. Murders, 7; males 6, females 1. Suicides, 42; males 30, females 12. Accidental, 156; males 119, females 37.

Methods of murders: Shooting, 3; cutting throat, 1; blows on head, 3.

Methods of suicide: Shooting, 12; drowning, 3; hanging, 5; carbolic acid, 11; other poisons, 8; remainder by various methods.

Methods of accidents: Steam cars, 40; interurban cars, 3; street cars, 3; automobiles, 4; motorcycle, 1; machinery, 7; mining, 2; electricity, 5; crushing injuries, 17; burns and scalds, 12; drowning, 2; gunshots, 2; horses and vehicles, 11; falls, 27, and remainder by various methods.

November, 1911.—One hundred ninety-five deaths. In the corresponding month last year, 184. In the preceding month, 205. The murders numbered 12; 10 males and 2 females. Suicides numbered 32; 23 males and 9 females. The methods used were: Gunshot, 5; cutting throat, 3; hanging, 6; carbolic acid, 8; muriatic acid, 2; strychnia, 2; other poisons, 4; artificial gas, 2. Accidental deaths, 195; males 149, females 46. Of the accidental deaths, steam railroads caused 34; interurbans, 6; street cars, 2; automobiles, 3; motorcycles, 2; machinery, 2; mining, 5; electricity, 2; burns and scalds, 20; accidental falls, 18; crushing injuries, 5; gunshot, 8; horses and vehicles, 8; asphyxiation by gas, 9; frozen, 2, and the remainder by various methods.

December, 1911.—One hundred ninety deaths by violence. In the same month last year, 217. In the preceding month, 195. The murders numbered 5, all were males. Suicides numbered 29; 18 males and 11 females. Methods chosen: Gunshot, 8 males and 2 females; cutting throat, 2 males; hanging, 1 female; carbolic acid, 2 males, 6 females; other poisons, 3 males, 2 females; drowning, 2 males; jumping off train, 1 male. The accidental deaths numbered 156. Steam railroads caused 34; interurbans, 1; automobiles, 1; falls, 20; crushing injuries, 20; burns and scalds, 30; gunshot, 15; drowning, 3; horses and vehicles, 3; poisons, 2; suffocation and asphyxiation, 11; mining, 3; freezing, 4; carbolic acid, 3; and the remainder by various methods.

CANCER.

	1908.	1909.	1910.	1911.
January	117	141	145	176
February	134	152	133	167
March	120	145	165	166
April	162	141	167	151
May	153	162	162	153
June	140	149	157	156
July	171	163	154	169
August	150	169	165	150
September	155	160	157	154
October	171	150	159	163
November	137	145	152	168
December	129	151	156	165
Totals	1,739	1,828	1,872	1,933

MONTHLY ANALYSIS OF DISEASE PREVALENCE.

(As Published in Monthly Bulletin.)

January, 1911.—The most prevalent disease was tonsilitis, which was also true for January, 1910. The order of disease prevalence was as follows: Tonsilitis, influenza, bronchitis, rheumatism, scarlet fever, measles, pneumonia, diphtheria, pulmonary tuberculosis, typhoid fever, diarrhea, chickenpox, erysipelas, other forms of tuberculosis, whooping cough, inflammation of bowels, smallpox, intermittent and remittent fever, malaria fever, puerperal fever, dysentery, cholera morbus, cerebro-spinal meningitis, anterior poliomyelitis, cholera infantum.

February, 1911.—Influenza was reported as the most prevalent disease, which was true also in same month last year. The order of prevalence was as follows: Influenza, tonsilitis, bronchitis, rheumatism, measles, pneumonia, bronchial, scarlet fever, tuberculosis, pulmonary, lobar pneumonia, diphtheria and membranous croup, typhoid fever, erysipelas, diarrhea, whooping cough, chickenpox, smallpox, intermittent and remittent fever, malarial fever, tuberculosis other forms, puerperal fever, dysentery, inflammation of bowels, cerebro-spinal meningitis, cholera morbus, anterior poliomyelitis, cholera infantum.

March, 1911.—Measles was reported as the most prevalent disease and influenza second. Influenza was reported as the most prevalent disease for the preceding month. The order of preva-

lence was as follows: Measles, influenza, tonsilitis, rheumatism, bronchitis, scarlet fever, tuberculosis, pulmonary tuberculosis, lobar pneumonia, bronchial, diphtheria and croup, erysipelas, typhoid fever, diarrhea, smallpox, whooping cough, chickenpox, other forms of tuberculosis, intermittent and remittent fever, malarial fever, puerperal fever, inflammation of bowels, dysentery, cerebro-spinal meningitis, cholera infantum, cholera morbus anterior poliomyelitis.

April, 1911.—As in the preceding month, measles was reported as the most prevalent disease. The order of prevalence was as follows: Measles, tonsilitis, bronchitis, rheumatism, influenza, scarlet fever, pulmonary tuberculosis, lobar pneumonia, smallpox, bronchial pneumonia, typhoid fever, diarrhea, whooping cough, diphtheria and membranous croup, chickenpox, erysipelas, intermittent and remittent fever, malaria fever, other forms of tuberculosis, inflammation of bowels, dysentery, cerebro-spinal meningitis, cholera infantum, puerperal fever, cholera morbus, anterior poliomyelitis.

May, 1911.—As in the same month last year, measles was the most prevalent disease. Following is the order of prevalence: Measles, rheumatism, tonsilitis, scarlet fever, pulmonary tuberculosis, bronchitis, typhoid fever, diarrhea, influenza, diphtheria, whooping cough, lobar pneumonia, malaria fever, smallpox, bronchial pneumonia, erysipelas, chickenpox, other forms of tuberculosis, cholera morbus, inflammation of bowels, dysentery, intermittent and remittent fever, puerperal fever, cholera infantum, anterior poliomyelitis, cerebro-spinal meningitis.

June, 1911.—Diarrhea was the most prevalent disease. Following is the order of prevalence: Diarrhea, rheumatism, tuberculosis, pulmonary, tonsilitis, typhoid fever, cholera morbus, bronchitis, scarlet fever, cholera infantum, diphtheria and croup, dysentery, inflammation of bowels, malaria fever, whooping cough, smallpox, intermittent and remittent fever, lobar pneumonia, erysipelas, puerperal fever, cerebro-spinal meningitis, anterior poliomyelitis.

July, 1911.—Diarrhea was the most prevalent disease. Then following in order typhoid fever, rheumatism, cholera morbus, tonsilitis, tuberculosis, cholera infantum, dysentery, bronchitis, inflammation of the bowels, measles, diphtheria and membranous croup, scarlet fever, whooping cough, smallpox, influenza, pneumonia, chickenpox, erysipelas, poliomyelitis, cerebro-spinal meningitis, puerperal fever.

August, 1911.—Typhoid fever was reported as the most prevalent dangerous disease. The following was the order of prevalence:

Typhoid fever, diarrhea, pulmonary tuberculosis, rheumatism, tonsilitis, cholera morbus, bronchitis, scarlet fever, cholera infantum, diphtheria and croup, dysentery, inflammation of bowels, intermittent and remittent fever, malaria fever, measles, whooping cough, influenza, lobar pneumonia, smallpox, infantile paralysis, tuberculosis other forms, erysipelas, bronchial pneumonia, chickenpox, cerebro-spinal meningitis, puerperal fever.

September, 1911.—Typhoid fever, as in the preceding month, was reported as the most dangerous disease; tonsilitis was reported as the next most prevalent and scarlet fever, which was ninth in the preceding month, rose to seventh place this month. The following is the order of prevalence: Typhoid fever, tonsilitis, diarrhea, bronchitis, rheumatism, pulmonary tuberculosis, scarlet fever, diphtheria and croup, dysentery, cholera infantum, intermittent and remittent fever, cholera morbus, malaria fever, influenza, inflammation of bowels, whooping cough, tuberculosis, other forms, infantile paralysis, lobar pneumonia, erysipelas, bronchial pneumonia, chickenpox, measles, cerebro-spinal meningitis, puerperal fever, smallpox.

October, 1911.—Typhoid fever was the most prevalent serious disease. This was also true in September. Order of prevalence was as follows: Typhoid fever, bronchitis, scarlet fever, tonsilitis, diphtheria, rheumatism, diarrhea, influenza, pneumonia, intermittent and remittent fever, malarial fever, poliomyelitis, dysentery, cholera morbus, inflammation of bowels, chickenpox, whooping cough, cholera infantum, erysipelas, measles, smallpox, cerebro-spinal meningitis, puerperal fever.

November, 1911.—During the month of November, diphtheria, scarlet fever and tonsilitis were reported as being equally prevalent. Bronchitis and typhoid fever were reported as next most prevalent. Following is the order of prevalence: Diphtheria, scarlet fever, tonsilitis, bronchitis, typhoid fever, rheumatism, influenza, pulmonary tuberculosis, lobar pneumonia, bronchial pneumonia, diarrhea, chickenpox, intermittent and remittent fever, whooping cough, erysipelas, malaria fever, other forms of tuberculosis, inflammation of bowels, measles, smallpox, dysentery, cholera morbus, infantile paralysis, puerperal fever, cerebro-spinal meningitis, cholera infantum.

December, 1911.—Tonsilitis was the most prevalent disease, which was also the case in December, 1910. Following is the order of prevalence throughout the State: Tonsilitis, bronchitis, scarlet

fever, diphtheria and membranous croup, influenza, typhoid fever, rheumatism, pulmonary tuberculosis, lobar pneumonia, bronchial pneumonia, diarrhea, chickenpox, measles, erysipelas, intermittent and remittent fever, smallpox, other forms of tuberculosis, whooping cough, rabies in animals, inflammation of bowels, dysentery, puerperal fever, cholera morbus, malaria fever, poliomyelitis, rabies in human, cerebro-spinal fever, cholera infantum, leprosy.

TABLES

OF

ANNUAL STATISTICAL REPORT

FOR THE YEAR 1911.

TABLE No. 1.

Deaths in Indiana During the Year Ending December 31, 1911, with Rates per 100,000 Population According to the U. S. Census of 1911.

Classification Number.	CAUSES OF DEATH.	Number of Deaths.	Death Rate per 100,000.
I. GENERAL DISEASES.			
1	Typhoid fever.....	736	27.2
2	Typhus fever.....		
3	Relapsing fever.....		
4	Malaria.....	124	4.5
5	Smallpox.....	3	.1
6	Measles.....	280	10.3
7	Scarlet fever.....	179	6.6
8	Whooping-cough.....	320	11.8
9	Diphtheria.....	374	13.8
10	Influenza.....	659	24.4
11	Miliary fever.....		
12	Asiatic cholera.....		
13	Cholera nostras.....	12	.4
14	Dysentery.....	165	6.1
15	Plague.....		
16	Yellow fever.....		
17	Leprosy.....		
18	Erysipelas.....	113	4.1
19	Other epidemic diseases.....	13	.4
20	Purulent infection and septicaemia.....	32	1.1
21	Glanders.....		
22	Anthrax.....	2	.07
23	Rabies.....	4	.1
24	Tetanus.....	26	.9
25	Mycoses.....	3	.1
26	Pellagra.....	3	.1
27	Beriberi.....		
28	Tuberculosis of the lungs.....	3,525	130.5
29	Acute miliary tuberculosis.....	63	2.3
30	Tuberculous meningitis.....	204	7.5
31	Abdominal tuberculosis.....	244	9.0
32	Pott's disease.....	25	.9
33	White swellings.....	21	.7
34	Tuberculosis of other organs.....	90	3.3
35	Disseminated tuberculosis.....	58	2.1

TABLE No. 1—Continued.

Classification Number.	CAUSES OF DEATH.	Number of Deaths.	Death Rate per 100,000.
36	Rickets.....	29	1.0
37	Syphilis.....	150	5.5
38	Gonococcus infection.....	4	.1
39	Cancer of the buccal cavity.....	77	2.8
40	Cancer of the stomach and liver.....	763	28.2
41	Cancer of the peritoneum, intestines, rectum.....	208	7.7
42	Cancer of the female genital organs.....	322	11.9
43	Cancer of the breast.....	185	6.8
44	Cancer of the skin.....	142	5.2
45	Cancer of other or unspecified organs.....	222	8.2
46	Other tumors (tumors of the female genital organs excepted).....	19	.7
47	Acute articular rheumatism.....	217	8.0
48	Chronic rheumatism and goit.....	67	2.4
49	Scurvy.....	3	.1
50	Diabetes.....	389	14.4
51	Exophthalmic goitre.....	45	1.6
52	Addison's disease.....	11	.4
53	Leucæmia.....	36	1.3
54	Anaemia, chlorosis.....	117	4.3
55	Other general diseases.....	48	1.7
56	Alcoholism (acute or chronic).....	107	3.9
57	Chronic lead poisoning.....	7	.2
58	Other chronic occupation poisonings.....	1	.03
59	Other chronic poisonings.....	20	.7
II. DISEASES OF THE NERVOUS SYSTEM AND OF THE ORGANS OF SPECIAL SENSES.			
60	Encephalitis.....	38	1.4
61a	Simple meningitis.....	97	3.5
61b	Cerebrospinal meningitis.....	26	.9
61c	Cerebrospinal fever.....	26	.9
62	Locomotor ataxia.....	81	2.9
63a	Acute anterior poliomyelitis.....	67	2.4
63b	Other diseases of the spinal cord.....	171	6.3
64	Cerebral hæmorrhage, apoplexy.....	2,014	74.5
65	Softening of the brain.....	53	1.9
66	Paralysis without specified cause.....	237	8.7
67	General paralysis of the insane.....	200	7.4
68	Other forms of mental alienation.....	75	2.7
69	Epilepsy.....	153	5.6
70	Convulsions (nonpuerperal).....	1	.03
71	Convulsions of infants.....	40	1.4
72	Chorea.....	11	.4
73	Neuralgia and neuritis.....	5	.1
74	Other disease of the nervous system.....	89	3.2
75	Diseases of the eyes and their annexa.....	6	.2
76	Diseases of the ears.....	79	2.9
III. DISEASES OF THE CIRCULATORY SYSTEM.			
77	Pericarditis.....	42	1.5
78	Acute endocarditis.....	87	3.2
79	Organic diseases of the heart.....	3,972	147.1
80	Angina pectoris.....	234	8.6
81	Diseases of the arteries, atheroma, aneurysm, etc.....	517	19.1
82	Embolism and thrombosis.....	89	3.2
83	Diseases of the veins (varicose, hæmorrhoids, phlebitis, etc.).....	11	.4
84	Diseases of the lymphatic system (lymphangitis, etc.).....	10	.3
85	Hæmorrhage: other diseases of the circulatory system.....	12	.4

TABLE No. 1—Continued.

Classification Number.	CAUSES OF DEATH.	Number of Deaths.	Death Rate per 100,000.
IV. DISEASES OF THE RESPIRATORY SYSTEM.			
86	Diseases of the nasal fossae.....	13	.4
87	Diseases of the larynx.....	44	1.6
88	Diseases of the thyroid body.....	14	.5
89	Acute bronchitis.....	210	7.7
90	Chronic bronchitis.....	210	7.7
91	Broncho pneumonia.....	902	33.4
92a	Lobar pneumonia.....	1,034	38.2
92b	Pneumonia (undefined).....	676	25.0
93	Pleurisy.....	66	2.4
94	Pulmonary congestion, pulmonary apoplexy.....	15	.5
95	Gangrene of the lungs.....	4	.1
96	Asthma.....	91	3.3
97	Pulmonary emphysema.....	13	.4
98	Other disease of the respiratory system (tuberculosis excepted).....	18	.6
V. DISEASES OF THE DIGESTIVE SYSTEM.			
99	Diseases of the mouth and annexa.....	21	.7
100	Diseases of the pharynx.....	35	1.2
101	Diseases of the oesophagus.....	1	.03
102	Ulcer of the stomach.....	93	3.4
103	Other diseases of the stomach (cancer excepted).....	486	17.9
104	Diarrhoea and enteritis (under 2 years).....	1,629	60.3
105	Diarrhoea and enteritis (2 years and over).....	492	18.2
106	Ankylostomiasis.....	1	.03
107	Intestinal parasites.....	3	.1
108	Appendicitis and typhlitis.....	282	10.4
109a	Hernia.....	93	3.4
109b	Intestinal obstruction.....	249	9.2
110	Other diseases of the intestines.....	89	3.2
111	Acute yellow atrophy of the liver.....	24	.8
112	Hydatid tumor of the liver.....		
113	Cirrhosis of the liver.....	329	12.1
114	Biliary calculi.....	131	4.8
115	Other diseases of the liver.....	175	6.4
116	Diseases of the spleen.....	6	.2
117	Simple peritonitis (nonpuerperal).....	37	1.3
118	Other diseases of the digestive system (cancer and tuberculosis excepted).....	8	.2
VI. NONVENEREAL DISEASES OF THE GENITO-URINARY SYSTEM AND ADNEXA.			
119	Acute nephritis.....	213	7.8
120	Bright's disease.....	1,997	73.9
121	Chyluria.....	3	.1
122	Other diseases of the kidneys and annexa.....	71	2.6
123	Calculi of the urinary passages.....	24	.8
124	Diseases of the bladder.....	94	3.4
125	Diseases of the urethra, urinary abscess, etc.....	6	.2
126	Diseases of the prostate.....	115	4.2
127	Nonvenereal diseases of the male genital organs.....	2	.07
128	Uterine hemorrhage (nonpuerperal).....	4	.1
129	Uterine tumor (noncancerous).....	52	1.9
130	Other diseases of the uterus.....	29	1.0
131	Cysts and other tumors of the ovary.....	37	1.3
132	Salpingitis and other diseases of the female genital organs.....	77	2.8
133	Nonpuerperal diseases of the breast (cancer excepted).....		

TABLE No. 1—Continued.

Classification Number.	CAUSES OF DEATH.	Number of Deaths.	Death Rate per 100,000.
VII. THE PUERPERAL STATE.			
134	Accidents of pregnancy.....	45	1.6
135	Puerperal hemorrhage.....	14	.5
136	Other accidents of labor.....	25	.9
137	Puerperal septicæmia.....	293	10.8
138	Puerperal albuminuria and convulsions.....	79	2.9
139	Puerperal phlegmasia, alba dolens, embolus, sudden death.....	4	.1
140	Following childbirth (not otherwise defined).....	32	1.1
141	Puerperal diseases of the breast.....	1	.03
VIII. DISEASES OF THE SKIN AND CELLULAR TISSUE.			
142	Gangrene.....	83	3.0
143	Furuncle.....	18	.6
144	Acute abscess.....	21	.7
145	Other diseases of the skin and annææ.....	27	.9
IX. DISEASES OF THE BONES AND THE ORGANS OF LOCOMOTION.			
146	Diseases of the bones (tuberculosis excepted).....	34	1.2
147	Diseases of the joints (tuberculosis and rheumatism excepted).....	7	.2
148	Amputations.....		
149	Other diseases of the organs of locomotion.....		
X. MALFORMATIONS.			
150a	Hydrocephalus.....	47	1.7
150b	Congenital malformation of the heart.....	318	11.7
150c	Other congenital malformation.....	113	4.1
XI. DISEASES OF EARLY INFANCY.			
151a	Premature birth.....	1,145	42.3
151b	Congenital debility, etc.....	193	7.1
152a	Injuries at birth.....	198	7.3
152b	Other diseases peculiar to early infancy.....	172	6.3
153	Lack of care.....	19	.7
XII. OLD AGE.			
154	Senility.....	* 400	15.1
XIII. AFFECTIONS PRODUCED BY EXTERNAL CAUSES.			
155	Suicide by poison.....	177	6.5
156	Suicide by asphyxia.....	12	.4
157	Suicide by hanging or strangulation.....	78	2.8
158	Suicide by drowning.....	45	1.6
159	Suicide by firearms.....	100	3.7
160	Suicide by cutting or piercing instruments.....	19	.7
161	Suicide by jumping from high places.....	4	.1
162	Suicide by crushing.....	7	.2
163	Other suicides.....	3	.1
164	Poisoning by food.....	19	.7
165	Other acute poisonings.....	69	2.5
166	Conflagration.....	12	.4
167	Burns (conflagration excepted).....	202	7.4
168	Absorption of deleterious gases (conflagration excepted).....	47	1.7
169	Accidental drowning.....	183	6.7
170	Traumatism by firearms.....	68	2.5
171	Traumatism by cutting or piercing instruments.....	28	1.0
172	Traumatism by fall.....	441	16.3
173	Traumatism in mines and quarries.....	50	1.8
174	Traumatism by machines.....	43	1.6

TABLE No. 1—Continued.

Classification Number.	CAUSES OF DEATH.	Number of Deaths.	Death Rate per 100,000.
175a	Railroad accidents and injuries	423	15.6
175b	Street car accidents and injuries	79	2.9
175c	Automobile accidents and injuries	33	1.2
175d	Injuries by other vehicles	46	1.7
175e	Other accidental traumatism	98	3.6
176	Injuries by animals	85	3.1
177	Starvation	1	.03
178	Excessive cold	13	.4
179	Effects of heat	82	3.0
180	Lightning	21	.7
181	Electricity (lightning excepted)	38	1.4
182	Homicide by firearms	92	3.4
183	Homicide by cutting or piercing instruments	12	.4
184	Homicide by other means	19	.7
185	Fractures (cause not specified)	7	.2
186	Other external violence	81	2.9
XIV. ILL DEFINED DISEASES.			
187	Ill defined organic diseases	2	.07
188	Sudden death	1	.03
189	Ill defined, or nonspecified	65	2.4
Total deaths from all causes		35,231	1,304.4

TABLE No. 2.

Deaths from All Causes by Months, Ages, Color, Nationality and Conjugal Condition, for the Year Ending December 31, 1911. International Classification.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
I. GENERAL DISEASES.												
1. Typhoid fever.	1,006	1,028	1,119	997	826	761	873	809	701	777	794	776
2. Typhus fever.	44	42	36	47	31	26	78	109	91	99	77	54
3. Relapsing fever.												
4. Malaria.	4	9	6	7	7	16	14	21	10	12	11	7
5. Smallpox.			2			1						
6. Measles.	19	32	61	92	44	14	9	4	3	1		1
7. Scarlet fever.	26	19	33	23	17	12	5	4	10	7	12	11
8. Whooping cough.	14	20	46	31	50	37	47	28	9	5	22	11
9. Diphtheria and croup.	40	31	22	17	9	18	13	13	32	78	54	47
10. Influenza.	149	172	154	90	19	3	1	4		7	23	37
11. Miliary fever.												
12. Asiatic cholera.					1	1	4	2	2	2		
13. Cholera nostras.					4	9	39	35	27	13	7	4
14. Dysentery.	9	5	7	6								
15. Plague.												
16. Yellow fever.												
17. Leprosy.												
18. Erysipelas.	17	18	18	13	13	7	1	4	3	4	7	8
19. Other epidemic diseases.	1	1	2		4	3			1			2
20. Purulent infection and septicaemia.	8	2	6	2		1	5	1	2	2	1	2
21. Glanders.												
22. Anthrax.	1	1		1								
23. Rabies.												
24. Tetanus.	1	2	1	1	2	3	1	4		7	1	1
25. Mycoses.						1						

TABLE No. 2—Continued.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
26. Pellagra.....					1		1		1			
27. Beriberi.....	340	320	369	331	306	310	300	283	208	244	256	258
28. Tuberculosis of the lungs.....	3	4	4	5	5	5	7	8	2	2	5	7
29. Acute miliary tuberculosis.....	16	17	22	33	19	12	21	13	13	13	12	13
30. Tuberculous meningitis.....												
31. Abdominal tuberculosis.....	24	17	12	13	21	18	28	23	31	26	15	16
32. Pott's disease.....		5	3	2	6	1	4		1	2		1
33. White swellings.....	2	1	1	3	4	1	3		1	1	1	2
34. Tuberculosis of other organs.....	11	5	4	12	6	8	6	7	5	10	9	7
35. Disseminated tuberculosis.....	3	7	9	2	3	4	4	4	6	5	5	6
36. Rickets.....	3	3	1	4	3	1	3	3	2	1	3	2
37. Syphilis.....	11	15	9	11	14	13	11	9	15	12	16	14
38. Gonococcus infection.....		1	1				2					
39. Cancer of the buccal cavity.....		7	5	6	3	6	5	7	3	8	7	9
40. Cancer of the stomach, liver.....	65	66	66	58	72	66	66	61	59	61	60	63
41. Cancer of the peritoneum, intestines, rectum.....	20	15	16	17	15	13	18	20	17	20	17	20
42. Cancer of the female genital organs.....	36	33	33	21	27	26	27	16	22	25	30	26
43. Cancer of the breast.....	14	15	13	22	6	17	10	10	19	16	26	17
44. Cancer of the skin.....	12	12	18	9	9	11	14	14	9	17	12	5
45. Cancer of other or unspecified organs.....	17	18	11	14	20	16	27	20	25	15	15	24
46. Other tumors (tumors of the female genital organs excepted).....	1	1	4	4	1	1	2	2		1	1	1
47. Acute articular rheumatism.....	19	28	30	28	20	20	10	10	7	15	9	21
48. Chronic rheumatism and gout.....	7	8	9	4	7	4	7	5	5	5	4	2
49. Scurvy.....	1						1					1
50. Diabetes.....	22	44	47	25	30	20	34	35	27	19	42	44
51. Exophthalmic goitre.....	2	3	4	6	2	1	5	9	3	2	5	3
52. Addison's disease.....		1		1		1	2		3		1	2
53. Leucæmia.....	1	3	2	2	3	4	4	2	4	2	3	6
54. Anæmia, chloria.....	11	11	12	17	9	13	10	7	6	7	9	5
55. Other general diseases.....	8	2	4	5	3	2	9	4	2	2	4	3
56. Alcoholism (acute or chronic).....	11	8	14	9	5	9	11	6	12	4	9	9
57. Chronic lead poisoning.....	1			1					1		3	1
58. Other chronic occupation poisonings.....	1											
59. Other chronic poisonings.....		3	2	2	5		3	1	2	2		

II. DISEASES OF THE NERVOUS SYSTEM AND OF THE ORGANS OF SPECIAL SENSES.

	315	287	331	364	293	252	286	239	243	303	270	287
60. Encephalitis.....	3	1	4	5	6	3	4	1	1	3	.....	7
61. Meningitis.....	7	12	6	19	12	9	6	4	7	3	5	7
A. Simple meningitis.....	1	2	2	.....	3	4	3	5	.....	5	1	2
B. Cerebrospinal meningitis (undefined).....	6	2	1	2	5	1	1	1	2	4	.....	1
C. Cerebrospinal fever.....	9	14	4	10	8	4	3	5	4	4	10	6
62. Locomotor ataxia.....	6	4	2	6	7	2	2	9	6	16	5	3
63. Other diseases of the spinal cord:	9	14	20	16	13	18	15	12	18	12	14	10
A. Acute anterior poliomyelitis.....	183	149	194	202	159	144	185	141	145	167	161	174
B. Other diseases of the spinal cord.....	3	6	1	5	4	4	7	6	5	5	2	5
64. Cerebral hemorrhage, apoplexy.....	18	19	26	22	20	17	15	15	14	22	17	32
65. Softening of the brain.....	15	20	18	27	20	14	19	8	19	18	14	8
66. Paralysis without specified cause.....	7	7	9	5	1	3	7	9	6	7	5	9
67. General paralysis of the insane.....	10	17	14	22	11	8	10	11	8	18	13	11
68. Other forms of mental alienation.....	7	2	3	.....	1	7	3	6	3	3	2	3
69. Epilepsy.....	2	3	.....	1	2	.....	.....	1	.....	1	1	.....
70. Convulsions (nonpuerperal).....	9	7	13	11	8	7	3	4	.....	1	1	2
71. Convulsions of infants.....	1	10	14	10	12	6	3	1	.....	2	1	5
72. Chorea.....	9	.....	.....	.....	.....	.....	.....	.....	.....	4	9	1
73. Neuralgia and neuritis.....	9	7	13	11	8	7	3	4	5	8	9	5
74. Other diseases of the nervous system.....	1	.....	1	.....	.....	.....	.....	.....	.....	2	1	1
75. Diseases of the eyes and their annexa.....	9	10	14	10	12	6	3	1	.....	4	9	1
76. Diseases of the ears.....	482	385	476	450	439	364	393	377	346	404	425	433
III. DISEASES OF THE CIRCULATORY SYSTEM.												
77. Pericarditis.....	6	2	5	5	4	4	3	2	2	.....	7	2
78. Acute endocarditis.....	10	5	7	7	7	8	6	7	2	13	5	10
79. Organic diseases of the heart.....	384	304	373	367	353	279	315	318	282	328	331	338
80. Aneurysm.....	22	16	30	19	23	18	15	13	15	21	24	18
81. Diseases of the arteries, atheroma, aneurysm, etc.....	54	40	49	43	43	47	45	28	40	32	44	52
82. Embolism and Thrombosis.....	5	12	9	6	7	7	6	8	3	7	12	7
83. Diseases of the veins (varices, hemorrhoids, phlebitis, etc.).....	1	3	2	.....	1	.....	1	1	1	3	.....	3
84. Diseases of the lymphatic system (lymphangitis, etc.).....	1	3	1	3	1	1	2	1	1	3	.....	1
85. Hemorrhage; other diseases of the circulatory system.....	.....	3	.....	3	1	.....	.....	.....	1	.....	2	2

TABLE No. 2—Continued.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
IV. DISEASES OF THE RESPIRATORY SYSTEM.												
86. Diseases of the nasal fossae.....	600	480	453	396	225	96	85	91	126	160	273	325
87. Diseases of the larynx.....	5	3	1	3	1	1	2	2	4	1	4	1
88. Diseases of the thyroid body.....	5	1	2	3	2	2	2	1	3	7	7	7
89. Acute bronchitis.....	45	25	24	13	14	8	3	8	12	11	18	29
90. Chronic bronchitis.....	29	16	28	25	22	14	12	6	9	11	24	14
91. Broncho pneumonia.....	157	137	128	121	52	22	25	27	23	44	72	88
92. Pneumonia.....	200	163	158	134	68	15	16	21	28	48	74	100
A. Lobar pneumonia.....	118	122	97	83	52	19	15	14	25	24	57	60
B. Pneumonia (undefined).....	13	4	10	5	2	5	3	2	3	2	8	9
93. Pleurisy.....	3	2	1	1	1	2	1	1	1	2	2	1
94. Pulmonary congestion, pulmonary apoplexy.....	3	6	7	5	10	6	6	7	7	3	13	14
95. Gangrene of the lung.....	7	1	2	3	3	1	1	2	2	3	3	1
96. Asthma.....	1	3	2	1	1	1	1	1	1	3	1	1
97. Pulmonary embolism.....	3	1	2	1	1	1	1	1	1	3	1	1
98. Other diseases of the respiratory system (tuberculosis excepted).....	238	232	233	268	247	342	604	556	482	450	257	275
V. DISEASES OF THE DIGESTIVE SYSTEM.												
99. Diseases of the mouth and anæra.....	1	2	1	2	1	1	4	2	4	4	4	3
100. Diseases of the pharynx.....	5	3	3	3	1	1	2	2	2	4	4	5
101. Diseases of the œsophagus.....	1	1	2	3	3	1	1	1	1	1	1	1
102. Ulcer of the stomach.....	2	11	10	5	7	11	6	6	10	6	11	8
103. Other diseases of the stomach (cancer excepted).....	34	33	27	50	44	37	39	45	37	56	38	46
104. Diarrhoea and enteritis (under 2 years).....	54	42	52	52	57	141	357	285	290	208	75	46
105. Diarrhoea and enteritis (2 years and over).....	20	27	29	32	23	55	66	70	51	48	31	40
106. Ankylostomiasis.....	1	1	1	1	1	1	1	1	1	1	1	1
107. Intestinal parasites.....	1	1	1	1	1	1	1	1	1	1	1	1
108. Appendicitis and typhilitis.....	18	19	27	23	16	21	33	39	26	22	15	23
109. Hernia.....	8	8	12	4	3	4	9	11	11	10	5	8
A. Hernia.....	28	19	14	25	27	7	26	30	23	27	12	17
B. Intestinal obstruction.....	8	8	8	8	8	11	5	1	9	8	6	9
110. Other diseases of the intestines.....	2	2	4	2	8	1	4	1	4	3	2	2
111. Acute yellow atrophy of the liver.....												

112. Hydatid tumor of the liver.	25	21	21	21	37	31	26	40	26	29	22	30
113. Cirrhosis of the liver.	15	18	14	13	11	6	6	6	5	9	10	18
114. Biliary calculi.	14	11	8	23	17	11	15	15	10	13	20	18
115. Other diseases of the liver.	1	1				1	2			1		
116. Diseases of the spleen.												
117. Simple peritonitis (nonpuerperal).	2	6	2	4	1	2	3	3	3	3	5	3
118. Other diseases of the digestive system (cancer and tuberculosis excepted).	1		1	1		1		1	1	1		1
VI. NONVENTERAL DISEASES OF THE GENITO-URINARY SYSTEM AND ANNEXA.												
119. Acute nephritis.	237	227	262	260	241	197	223	195	184	210	235	253
120. Bright's disease.	22	9	18	26	26	20	14	11	13	15	18	21
121. Chyluria.	178	168	196	172	160	147	163	151	144	159	166	193
122. Other diseases of the kidneys and annexa.	3	6	7	9	7	1		4	2	2	12	7
123. Calculi of the urinary passages.	2	4	3	4	1	3		2		1		4
124. Diseases of the bladder.	8	8	9	8	8	5	14	7	5	9	9	4
125. Diseases of the urethra, urinary abscess, etc.												
126. Diseases of the prostate.	9	16	5	9	7	6	16	12	8	7	12	8
127. Nonvenereal diseases of the male genital organs.					2							
128. Uterine hemorrhage (nonpuerperal).		1		1	1					1		
129. Uterine tumor (noncancerous).	1	3	4	6	7	2	6	4	4	3	6	6
130. Other diseases of the uterus.	2	4	4	1	4	3	4	3		2	1	1
131. Cysts and other tumors of the ovary.	5	2	1	6	6	4	1		3	3	5	1
132. Salpingitis and other diseases of the female genital organs.	6	5	15	6	11	4	5	1	5	8	4	7
133. Nonpuerperal diseases of the breast (cancer excepted).												
VII. THE PUERPERAL STATE.												
134. Accidents of pregnancy.	61	38	62	67	56	40	26	21	26	32	30	34
135. Puerperal hemorrhage.	3	3	3	5	8	4	6	1	5	1	4	2
136. Other accidents of labor.		2	2	3	3			1			1	2
137. Puerperal septicæmia.	4		1	2	3	5	2	2	2	1	3	
138. Puerperal albuminuria and convulsions.	41	25	44	40	30	22	11	12	13	21	13	21
	10	6	5	9	7	7		4	4	5	8	7
139. Puerperal phlegmasia, alba dolens, embolus, sudden death.			1							1	1	1
140. Following childbirth (not otherwise defined).	3	2	6	8	5	2		1	1	3		1
141. Puerperal diseases of the breast.												
VIII. DISEASES OF THE SKIN AND CELLULAR TISSUE.												
142. Gæugrene.	14	13	10	18	10	11	16	11	10	10	15	11
143. Furuncle.	11	10	5	11	5	6	7	3	4	3	11	7
144. Acute abscess.	1	1	2	2	1	2	1	4	2	1	2	2
145. Other diseases of the skin and annexa.	2	1	1	3	3	1	5		2	3	1	2

TABLE No. 2—Continued.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
IX. DISEASES OF THE BONES AND THE ORGANS OF LOCOMOTION.												
146. Diseases of the bones (tuberculosis excepted).....	4	4	5	5	3	3	2	2	1	2	3	7
147. Diseases of the joints (tuberculosis and rheumatism excepted).....	4	2	5	5	3	3	1	2	1	2	2	5
148. Amputations.....	2	2	.....	.....	.....	.....	1	.....	.....	.....	1	2
149. Other diseases of the organs of locomotion.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
X. MALFORMATIONS.												
150. Congenital malformations (stillbirths not included):	41	42	36	44	43	41	41	24	34	54	36	42
A. Hydrocephalus.....	4	1	4	3	7	4	5	2	4	8	2	3
B. Congenital malformation of the heart.....	27	25	23	34	28	31	26	15	20	38	24	27
C. Other congenital malformations.....	10	16	9	7	8	6	10	7	10	8	10	12
XI. EARLY INFANCY.												
151. Congenital debility, icterus and sclerema:	155	143	168	139	134	153	129	147	127	129	149	154
A. Premature birth.....	103	94	113	97	95	106	90	98	69	82	97	101
B. Congenital debility, atrophy, marasmus, etc.	18	11	15	17	15	12	17	14	23	13	13	19
152. Other causes peculiar to early infancy:	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
A. Injuries at birth.....	14	15	19	16	17	16	13	19	12	24	17	16
B. Other causes peculiar to early infancy.....	19	23	19	9	5	18	7	15	20	6	14	17
153. Lack of care.....	1	.....	2	.....	2	1	2	1	3	4	2	1
XII. OLD AGE.												
154. Senility.....	50	30	36	45	41	25	28	26	25	27	37	39
.....	50	30	36	45	41	25	28	26	25	27	37	39
XIII. AFFECTIONS PRODUCED BY EXTERNAL CAUSES.												
155. Suicide by poison.....	214	180	165	199	267	221	325	278	219	226	228	215
156. Suicide by asphyxia.....	15	11	14	15	12	10	17	24	12	19	17	11
157. Suicide by hanging or strangulation.....	2	.....	.....	1	.....	1	1	1	1	1	1	2
158. Suicide by drowning.....	7	8	2	8	12	10	3	8	7	5	6	2
.....	2	3	3	4	5	5	5	3	5	4	.....	3
159. Suicide by firearms.....	6	7	9	8	10	11	6	9	10	11	.....	10

160. Suicide by cutting or piercing instruments	2	3	2	3	3	2	1	1	3	2
161. Suicide by jumping from high place	1	1	1	1	1	1	1	1	1	1
162. Suicide by crushing	1	1	1	1	1	1	1	1	1	1
163. Other suicides	4	2	2	2	2	2	2	2	2	2
164. Poisoning by food	1	1	1	1	1	1	1	1	1	1
165. Other acute poisonings	8	5	2	7	6	9	10	3	9	6
166. Conflagration	2	3	3	16	14	15	9	12	12	21
167. Burns (conflagration excepted)	23	19	18	16	14	15	9	12	12	31
168. Absorption of deleterious gases (conflagration excepted)	3	2	3	1	5	2	3	1	4	11
169. Accidental drowning	4	8	3	5	33	52	30	12	2	1
170. Traumatism by firearms	7	3	4	4	3	1	8	6	3	9
171. Traumatism by cutting or piercing instruments	1	1	2	4	8	4	1	1	1	14
172. Traumatism by fall	35	29	26	45	35	34	30	43	48	27
173. Traumatism in mines and quarries	5	2	8	3	5	3	5	3	3	30
174. Traumatism by machines	3	4	3	2	5	2	4	3	6	4
175. Traumatism by other crushing:	39	25	23	30	37	41	43	33	37	39
A. Railroad accidents and injuries	7	3	7	4	6	6	7	10	7	10
B. Street car accidents and injuries	1	1	4	1	7	3	1	3	5	2
C. Automobile accidents and injuries	12	9	6	11	8	8	6	6	4	1
D. Injuries by other vehicles	12	9	6	11	8	8	12	8	11	12
E. Other accidental traumatism	2	5	2	6	12	7	15	8	7	6
176. Injuries by animals	2	5	2	6	12	7	15	8	11	4
177. Starvation	3	2	1	1	1	1	1	1	1	3
178. Excessive cold	3	2	1	1	1	1	1	1	1	3
179. Effects of heat	3	2	1	1	1	1	1	1	1	3
180. Lighting	3	2	1	1	1	1	1	1	1	3
181. Electricity (lighting excepted)	1	1	2	4	2	3	3	4	4	2
182. Homicide by firearms	8	9	9	3	5	6	10	11	9	5
183. Homicide by cutting or piercing instruments	2	1	1	1	1	1	2	4	1	5
184. Homicide by other means	2	2	2	1	2	2	1	2	2	3
185. Fractures (cause not specified)	1	3	1	1	1	2	2	2	2	3
186. Other external violence	7	8	5	6	3	2	6	3	7	19
XIV. UN-OVERSEEN DEATHS.										
187. Ill-defined organic disease	3	3	8	5	1	8	10	9	3	4
188. Sudden death	1	1	1	1	1	1	1	1	1	3
189. Ill-defined, or nonspecified	3	3	7	5	1	8	10	8	3	3
Total deaths from all causes	3,420	3,092	3,364	3,247	2,826	2,514	3,061	2,785	2,527	2,765
										2,854

TABLE No. 2—Continued.

Deaths from All Causes by Months, Ages, Color, Nationality and Conjugal Relation, for the Year Ending December 31, 1910. International Classification.

	Under 1	1	2	3	4	Total Under 5	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	
I. GENERAL DISEASES.																				
1. Typhoid fever.....	601	317	221	158	110	1,407	407	268	535	726	679	621	625	596	505	578	621	630	698	
2. Typhus fever.....	1	9	16	11	14	51	50	65	92	106	64	63	57	40	25	20	28	24	25	
3. Relapsing fever.....																				
4. Malaria.....	8	4	6	4	1	23	7	7	4	3	8	5	11	5	6	3	8	3	11	
5. Smallpox.....										1								1		
6. Measles.....	52	66	31	19	7	175	34	11	5	4	13	7	9	7	2		2	4	4	
7. Scarlet fever.....	7	13	24	14	16	74	66	18	10	5	2	3	1	1	1		1		1	
8. Whooping cough.....	187	66	21	13	3	290	21	1	1	1									2	
9. Diphtheria and croup.....	21	38	53	49	51	212	110	34	7	3	2	3	1						2	
10. Influenza.....	42	15	8	7	2	74	10	4	15	16	8	18	22	17	22	23	36	41	59	
11. Miliary fever.....																				
12. Asiatic cholera.....								1			1					2			2	
13. Cholera nostras.....	2					2														
14. Dysentery.....	1			9	1	12	1			1	2	1	1	2	3	6	7	10	16	
15. Plague.....																				
16. Yellow fever.....																				
17. Leprosy.....																				
18. Erysipelas.....	18	5				23	1	2	3	4		8	4	6	7	3	7	11	5	
19. Other epidemic diseases.....	4	3	1			9	2				1					1				
20. Purulent infection and septicaemia.....	5	2				7	1	3		1	1	2		2	2	1	5	2		
21. Glanders.....																				
22. Anthrax.....																				
23. Rabies.....			1			1	1	2									1	1	1	
24. Tetanus.....	9		2			11				2	2	1	3					2	2	
25. Mycoses.....										1									1	

26. Pellagra.	52	22	13	5	4	96	26	53	290	480	375	333	283	192	206	159	151	168
27. Beriberi.	3	3	3	3	3	122	20	6	10	6	7	3	3	3	2	6	3	2
28. Tuberculosis of the lungs.	52	35	17	15	3	122	20	9	15	8	3	5	6	3	4	3	2	...
29. Acute miliary tuberculosis.	16	9	1	1	2	29	5	7	10	16	22	14	27	10	14	16	18	15
30. Tuberculous meningitis.	32	2	1	1	1	5	2	1	5	4	1	1	1	1	3	2	1	...
31. Abdominal tuberculosis.	32	1	1	1	1	13	2	1	2	3	3	2	3	1	3	1	2	...
32. Pott's disease.	33	1	1	1	1	2	2	1	5	5	9	9	11	9	3	6	4	3
33. White swellings.	34	7	2	2	2	10	2	4	2	3	8	4	3	5	2	4	3	1
34. Tuberculosis of other organs.	6	3	1	...	...	10	2	4	2	3	8	4	3	5	2	4	3	2
35. Disseminated tuberculosis.	34	14	7	5	3	26	2	1	2	5	5	5	11	11	8	7	11	3
36. Rickets.	60	6	1	3	1	70	2	1	2	5	1	2	1	1	1	1	1	3
37. Syphilis.	1	1	1	1	1	1	1	1	...	...	...	...	...	...	...	...	...	...
38. Gonococcus infection.	39	1	1	1	1	1	1	1	...	...	...	...	...	...	...	...	...	...
39. Cancer of the buccal cavity.	40	1	1	1	1	1	1	2	1	1	5	10	34	51	61	100	114	136
40. Cancer of the stomach, liver.	41.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
41. Cancer of the peritoneum, intestines, rectum.	42.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
42. Cancer of the female genital organs.	43.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
43. Cancer of the breast.	44.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
44. Cancer of the skin.	45.	1	1	1	1	1	2	1	2	5	6	4	9	10	15	22	23	30
45. Cancer of other or unspecified organs.	46.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
46. Other tumors (tumors of the female genital organs excepted).	47.	1	1	...	...	1	1	1	1	3	3	3	11	10	10	20	34	31
47. Acute articular rheumatism.	48.	2	4	5	1	12	21	18	20	10	2	10	17	38	52	42	26	35
48. Chronic rheumatism and gout.	49.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
49. Scurvy.	50.	2	...	...	...	2	2	...	1	...	2	2	1	2	5	12	2	16
50. Diabetes.	51.	1	2	1	3	7	6	12	12	12	10	16	13	17	29	37	63	41
51. Exophthalmic goitre.	52.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
52. Addison's disease.	53.	1	1	...	...	2	4	2	2	5	5	2	2	3	4	3	3	3
53. Leucæmia.	54.	11	2	1	1	15	2	...	3	3	2	1	2	4	6	...	...	...
54. Anaemia, chlorosis.	55.	14	1	2	1	20	1	1	2	1	...	1	1	1	1	1	1	1
55. Other general diseases.	56.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
56. Alcoholism (acute or chronic).	57.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
57. Chronic lead poisoning.	58.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
58. Other chronic occupation poisonings.	59.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
59. Other chronic poisonings.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

TABLE No. 2—Continued.

	Under 1	1	2	3	4	Total Under 5	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69
II. DISEASES OF THE NERVOUS SYSTEM AND OF THE ORGANS OF SPECIAL SENSES.																			
60. Encephalitis.....	139	50	30	23	13	255	47	31	37	47	49	63	108	101	148	217	245	340	417
61. Meningitis:	9	1	2	2		14	2	1	4	2	2	3	2	1	1	1	1	2	1
A. Simple meningitis.....	25	14	6	3	3	51	12	3	3	5	1	2	3	2	5	3	2	3	
B. Cerebrospinal meningitis (unde- fined).....	7	4	2	4	1	18	1	1			2		1				1		1
C. Cerebrospinal fever.....	9	1			2	13	3	5	1	1					1			1	
62. Locomotor ataxia.....											1	1	3	5	3	16	10	11	13
63. Other diseases of the spinal cord:	12	18	7	7	2	46	12	6				1							1
A. Acute anterior poliomyelitis.....	2	3		1	1	7	1		4	3	2	4	8	9	3	11	9	23	19
B. Other diseases of the spinal cord.....	8	2	1	1		12	1		4	11	11	15	33	27	79	131	170	237	311
64. Cerebral hemorrhage, apoplexy.....																			
65. Softening of the brain.....																			
66. Paralysis without specified cause.....	2					2			2		3	3	4	4	1	2	3	6	5
67. General paralysis of the insane.....									1	2	3	11	15	15	17	18	13	15	25
68. Other forms of mental alienation.....										2	3	2	9	13	11	4	4	5	4
69. Epilepsy.....	4	1	3		3	11	3	7	6	13	18	13	15	19	10	12	3	9	7
70. Convulsions (nonpuerperal).....													1						
71. Convulsions of infants.....	38	1	1			40	2	1	2	2	1				2				
72. Chorea.....																			
73. Neuralgia and neuritis.....																			
74. Other diseases of the nervous system.....	5	1	1	2		8	1	2	5	2	2	5	7	6	8	1	2	5	7
75. Diseases of the eyes and their annexa.....																			
76. Diseases of the ears.....	18	4	7	2	1	32	9	5	5	4	2	2	1		2	1	3	5	2

TABLE No. 2—Continued.

	Under 1	1	2	3	4	Total Under 5	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69
104. Diarrhoea and enteritis (under 2 years)	1,260	369	82	22	13	1,629	23	4	4	9	6	11	13	11	14	19	21	34	37
105. Diarrhoea and enteritis (2 years and over)						117	1						1						
106. Ankylostomiasis					1	1	2												
107. Intestinal parasites					3	6	34												
108. Appendicitis and typhilitis		1	1	1				34	33	28	28	19	23	17	11	18	9	9	5
109. Hernia intestinal obstruction:																			
A. Hernia	9					9	1		1	1	3	5	2	3	5	5	6	8	11
B. Intestinal obstruction	40	7	3	5	1	56	12	7	11	8	8	7	6	14	9	12	17	11	20
110. Other diseases of the intestines	15		2	1	1	19	4	1	1	2	2		4	6	1	2	8	3	5
111. Acute yellow atrophy of the liver	1	1				2	1	1	1	1	1	1	1		3	1	2	2	1
112. Hydatid tumor of the liver																			
113. Cirrhosis of the liver	1	1				2	2		1	1	6	9	19	19	22	41	38	38	48
114. Biliary calculi										3	1	5	7	9	10	14	21	16	13
115. Other diseases of the liver	10	1				11	1		1	2	3	7	10	15	12	19	23	10	17
116. Diseases of the spleen											1				1	1			
117. Simple peritonitis (nonpuerperal)	3					3		4	2	3	4	6	1	2	5	3			1
118. Other diseases of the digestive system (cancer and tuberculosis excepted)														2	2		2		1
VI. NONVERNERAL DISEASES OF THE GENITO- URINARY SYSTEM AND ANNEXA.	41	9	7	4	2	73	8	15	26	49	65	71	109	121	120	171	192	256	324
119. Acute nephritis	18	5	3	3	2	31	2	7	4	11	8	7	15	14	10	13	16	12	10
120. Bright's disease	1	2	2	1		6	6	8	12	19	28	42	65	71	75	134	153	223	262
121. Chyluria	1					1													
122. Other diseases of the kidneys and annexa	13	1	2			16			1	2	2	1	3	3	6	6	2	2	8
123. Calculi of the urinary passages	3					3			1		2		2	2	1	2			4
124. Diseases of the bladder																			
125. Diseases of the urethra, urinary abscesses, etc.	7	1				2						1	2	3	3	3	3	3	13
126. Diseases of the prostate										1									
127. Nonverneral diseases of the male genital organs	1					1				1			1		1	2	7	3	17
128. Uterine hemorrhage (nonpuerperal)	2					2						1							

TABLE No. 2—Continued.

	Under 1	1	2	3	4	Total Under 5	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	
XI. EARLY INFANCY.																				
151. Congenital debility, icterus and scelerema	1,726	1				1,727														
A. Premature birth	1,144	1				1,145														
B. Congenital debility, atrophy, marasmus, etc.	193					193														
152. Other causes peculiar to early infancy:	198					198														
A. Injuries at birth	172					172														
B. Other causes peculiar to early infancy	19					19														
153. Lack of care.																				
XII. OLD AGE.																				
154. Senility.																	1	1	12	
																	1	1	12	
XIII. AFFECTIONS PRODUCED BY EXTERNAL CAUSES.																				
85. Suicide by poison	85	52	43	38	28	246	96	103	197	276	188	189	194	181	151	156	128	117	112	
155. Suicide by asphyxia									12	30	19	14	21	15	18	16	13	9	2	
156. Suicide by hanging or strangulation								1	1	4	5	3	5	12	5	9	9	7	10	
157. Suicide by drowning								1	1	5	4	2	2	4	6	5	3	8	2	
158. Suicide by firearms.									8	15	10	7	9	9	15	8	6	4	2	
159. Suicide by cutting or piercing instruments										1	2		2	1	4	3	1	3	1	
160. Suicide by jumping from high place														1	1	1				
161. Suicide by crushing										1			2		1				1	
162. Other suicides												2								
163. Poisoning by food.	2				1	3	2		3		1		3	2	2	1	1			
164. Other acute poisonings	5	15	5	3	2	30	1			2	6	3	3	4	1	6	3	7		
165. Conflagration					4	5	1													
166. Burns (conflagration excepted)	9	12	19	20	12	72	15	5	15	15	4	8	9	13	7	6	3	2	11	
167. Absorption of deleterious gases (conflagration excepted)	8	2				10	1	1	2	3	3	2	1	2	1	1	2	5	3	
168. Accidental drowning	1	6	5	2	1	15	9	20	40	20	24	12	13	3	5	7	4	3	3	

TABLE No. 2—Continued.

Deaths from All Causes by Months, Ages, Color, Nationality and Conjugal Relation, for the Year Ending December 31, 1910. International Classification.

	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 and over	Unknown.	White.	Colored.	American.	Foreign.	Not Reported.	Single.	Married.	Widowed or Divorced.	Not Reported.	Total.
I. GENERAL DISEASES.																	
1. Typhoid fever	657	403	86	130	43	8	2	10,015	452	9,556	841	70	3,994	4,593	1,846	34	10,407
2. Typhus fever	17	8	1					722	14	686	49	1	374	321	41		736
3. Relapsing fever																	
4. Malaria	7	8	4	1	1			117	7	114	10		49	52	23		124
5. Smallpox				1				3		3			1	2			3
6. Measles	3							277	3	273	5	2	237	37	6		280
7. Scarlet fever								179		178			172	7			179
8. Whooping cough	1							305	15	319	1		315	2	2	1	320
9. Diphtheria and croup								364	10	374			366	7		1	374
10. Influenza	74	72	90	40	17	1		637	22	577	78	4	118	268	267	6	659
11. Miliary fever																	
12. Asiatic cholera			2					11	1	9	3		3	6	3		12
13. Cholera nostras	2	29	25	11	4	2		158	7	135	25	5	16	78	68	3	165
14. Dysentery	32																
15. Plague																	
16. Yellow fever																	
17. Leprosy																	
18. Erysipelas	9	8	6	4		2		111	2	102	11		44	48	21		113
19. Other epidemic diseases								13		13			11	2			13
20. Purulent infection and septicaemia	2	1	1		1			32		26	5	1	14	9	8	1	32
21. Glanders																	
22. Anthrax								2		2			1		1		2
23. Rabies								25	1	23			16	8			4
24. Tetanus	2							3					2		2		26
25. Myoses	1									2			2		1		3

26. Pellagra.	136	78	32	9	3	1	3	244	3,273	228	24	1,241	1,789	483	12	3,525	3
27. Beriberi.	2	1						9	58	3	2	32	24	7	63	204	
28. Tuberculosis of the lungs.								9	199	5		176	26	2			
29. Acute millary tuberculosis.																	
30. Tuberculous meningitis.																	
31. Abdominal tuberculosis.	9	7	3	1				14	227	16	1	91	115	38		244	
32. Pott's disease.								22	3	25		16	8	1		25	
33. White swellings.								20	1	21		10	11			21	
34. Tuberculosis of other organs.	3	3	1					85	5	90		37	47	6		90	
35. Disseminated tuberculosis.	1		2					83	5	55	3	24	27	7		58	
36. Rickets.								28	1	29		29				29	
37. Syphilis.	4	2						139	11	141	5	94	29	25	2	150	
38. Gonococcus infection.								2	2	4		3		1		4	
39. Cancer of the buccal cavity.	14	8	4	4				76	1	64	13	10	38	29		77	
40. Cancer of the stomach, liver.	120	81	23	11	5			753	10	628	132	5	61	244	1	703	
41. Cancer of the peritoneum, intestines, rectum.	34	22	10	4				203	5	178	29	1	111	76		208	
42. Cancer of the female genital organs.	25	6	3	2		1		313	9	288	31	3	21	204	97	322	
43. Cancer of the breast.	16	15	4	4	2	1		178	7	167	18		18	102	65	185	
44. Cancer of the skin.	16	19	17	16	5	1		141	1	118	22	2	13	77	52	142	
45. Cancer of other or unspecified organs.	28	21	7	9	1			216	6	192	29	1	31	141	49	222	
46. Other tumors (tumors of the female genital organs excepted).								18	1	17	2	4	8	7		19	
47. Acute articular rheumatism.	15	18	12	4	3			205	12	198	18	1	82	91	44	217	
48. Chronic rheumatism and gout.	6	12	5	1	1			66	1	57	9	1	8	33	26	67	
49. Scurvy.								3		3		2	1			3	
50. Diabetes.	53	31	9	4	1	1		381	8	345	42	2	71	222	96	389	
51. Exophthalmic goitre.								43	2	45		11	29	5		45	
52. Addison's disease.	1							11		10	1	2	7	2		11	
53. Leucæmia.	1							36		33		14	21	1		36	
54. Anæmia, chlorosis.	14	4	1	3				117		101	16	35	59	23		117	
55. Other general diseases.	5	1	2					47	1	43	5	27	17	4		48	
56. Alcoholism (acute or chronic).								105	2	82	16	9	31	42	26	8	
57. Chronic lead poisoning.	3	2						7		6	1	2	5			107	
58. Other chronic occupation poisonings.								1		1		2	1			7	
59. Other chronic poisonings.	1	3	1	1				20		17	2	1	10	8		20	
II. DISEASES OF THE NERVOUS SYSTEM AND OF THE ORGANS OF SPECIAL SENSES.	486	440	300	149	35	4	1	3,376	94	2,994	449	27	705	1,591	1,148	26	3,470
60. Encephalitis.	1							37	1	36	1	1	28	7	2	1	38
61. Meningitis:																	
A. Simple meningitis.	2							94	3	92	5		78	12	7		97
B. Cerebrospinal meningitis (undefined).								26		26			20	2	4		26
C. Cerebrospinal fever.	1							26		26			23	3			26

TABLE No. 2—Continued.

	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 and Over.	Unknown.	White.	Colored.	American.	Foreign.	Not Reported.	Single.	Married.	Widowed or Divorced.	Not Reported.	Total.
62. Locomotor ataxia.....	8	8	2					79	2	76	5		10	53	18		81
63. Other diseases of the spinal cord:																	
A. Acute anterior poliomyelitis.....			1					68		67	1		64	3	1		68
B. Other diseases of the spinal cord.....	22	24	15	6	1			167	4	152	17	2	29	86	55	1	171
64. Cerebral hemorrhage, apoplexy.....	312	310	222	95	29	4		1,955	59	1,072	334	8	154	1,044	799	17	2,014
65. Softening of the brain.....	9	12	7	8				52	1	46	7		3	30	20		53
66. Paralysis without specified cause.....	41	45	38	24	3			227	10	203	30	4	19	103	116		237
67. General paralysis of the insane.....	24	22	10	9				196	4	170	24	6	31	108	58	3	200
68. Other forms of mental alienation.....	7	6	1	4				70	5	65	8	2	12	36	26	1	75
69. Epilepsy.....	4	1		1			1	150	3	144	7	2	103	27	21	2	153
70. Convulsions (nonpuerperal).....								40		40	1		40	1			1
71. Convulsions of infants.....								11		10	1		8	3			11
72. Chorea.....																	
73. Neuralgia and neuritis.....								5		5					4	1	5
74. Other diseases of the nervous system.....	5	7	4	2	2			87	2	80	8	1	26	46	16	1	80
75. Diseases of the eyes and their annexa.....								6		6			2	3			6
76. Diseases of the ears.....		2						79		78		1	55	20	4		79
III. DISEASES OF THE CIRCULATORY SYSTEM.																	
77. Pericarditis.....	771	711	513	268	68	17	3	4,776	197	4,148	771*	55	562	2,491	1,886	35	4,974
78. Acute endocarditis.....	6	4	2	1	1			42		36	5	1	10	18	12	2	42
79. Organic diseases of the heart.....	4	6		1				84	3	77	11		23	40	14		87
80. Angina pectoris.....	632	582	393	196	44	11	3	3,762	179	3,315	610*	47	455	1,995	1,495	27	3,972
81. Diseases of the arteries, aneurysm, etc.....	43	27	18	8	2			231	3	214	19	1	6	159	69		234
82. Embolism and thrombosis.....	73	104	117	56	20	6		511	6	401	111	5	40	216	256	5	517
83. Diseases of the veins (varices, hemorrhoids, phlebitis, etc.).....	11	6	10	6	1			84	5	74	14	1	10	45	33	1	80
84. Diseases of the lymphatic system (lymphangitis, etc.).....	2		2					10	1	10	1			5	6		11
85. Hemorrhage; other diseases of the circulatory system.....								10		10			10				10
		2						12		12			8	3	1		12

IV. DISEASES OF THE RESPIRATORY SYSTEM.

	270	255	251	139	41	12	3,161	149	2,914	381	15	1,455	1,007	840	8	3,310
86. Diseases of the nasal fossae.....	2	1	1	1	1	1	13	44	11	1	1	7	5	1	13	
87. Diseases of the larynx.....	1	1	1	1	1	1	44	44	44	44	44	36	8	8	44	
88. Diseases of the thyroid body.....	1	1	1	1	1	1	14	14	13	1	1	1	9	4	14	
89. Acute bronchitis.....	9	6	17	13	5	3	201	9	193	16	1	143	20	47	210	
90. Chronic bronchitis.....	27	38	51	25	15	15	206	4	162	46	2	9	68	132	1	210
91. Broncho pneumonia.....	58	68	61	36	5	5	854	48	821	79	2	560	160	180	2	902
92. Pneumonia:																
A. Lobar pneumonia.....	92	71	53	30	6	3	983	51	914	116	4	351	429	251	3	1,034
B. Pneumonia (undefined).....	59	50	48	26	8	1	653	23	591	82	3	304	210	162	676	
93. Pleurisy.....	2	3	3	3	3	3	62	4	56	10	10	18	33	13	2	66
94. Pulmonary congestion, pulmonary apoplexy.....		2	2	3	1	1	15	13	13	2	2	5	4	6	15	
95. Gangrene of the lung.....		12	10	5	1	1	4	4	69	20	2	14	43	34	4	
96. Asthma.....	17	12	10	5	1	1	82	9	69	7	6	1	5	7	91	
97. Pulmonary emphysema.....	3	3	3	3	3	3	13	7	7	6	6	1	5	7	13	
98. Other diseases of the respiratory system (tuberculosis excepted).....	2	1	1	1	1	1	17	1	16	2	2	5	10	3	18	
V. DISEASES OF THE DIGESTIVE SYSTEM.	199	185	128	71	15	6	4,062	122	3,895	277	12	2,526	1,103	549	6	4,184
99. Diseases of the mouth and annexa.....	1	1	1	1	1	1	21	21	21	21	21	19	1	1	21	
100. Diseases of the pharynx.....			4				35	35	35	35	35	24	7	4	35	
101. Diseases of the oesophagus.....							1	1	1	1	1	1	1	1	1	
102. Ulcer of the stomach.....	12	6	1	2	1	1	90	3	81	11	1	14	63	14	2	83
103. Other diseases of the stomach (cancer excepted).....	30	32	28	19	3	3	474	12	453	31	2	277	116	92	1	486
104. Diarrhoea and enteritis (under 2 years).....							1,571	58	1,627	2	2	1,629	176	135	2	1,629
105. Diarrhoea and enteritis (2 years and over).....	45	43	46	25	7	3	476	16	436	53	3	179	176	135	2	492
106. Ankylostomiasis.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
107. Intestinal parasites.....							3	3	3	3	3	3	3	3	3	
108. Appendicitis and typhlitis.....	3	2	2	1	1	1	275	7	265	16	1	142	127	13	282	
109. Hernia intestinal obstruction:																
A. Hernia.....							92	1	66	25	2	21	42	30	83	
B. Intestinal obstruction.....	10	13	5	4	2	1	241	8	214	34	1	100	89	60	249	
110. Other diseases of the intestines.....	20	13	11	3	2	2	88	1	78	11	1	25	36	28	89	
111. Acute yellow atrophy of the liver.....	7	9	9	4	2	2	24		21	3		6	16	2	24	
112. Hydatid tumor of the liver.....																
113. Cirrhosis of the liver.....	38	27	9	8	1	1	317	12	275	53	1	33	204	91	1	329
114. Biliary calculi.....	9	16	5	2	2	2	129	2	120	11	1	9	89	33	131	
115. Other diseases of the liver.....	19	16	6	3	3	3	175	5	153	21	1	31	107	37	175	
116. Diseases of the spleen.....	1	1	1	1	1	1	5	1	5	1	1	4	4	2	6	

*1 Chinese.

TABLE No. 2—Continued.

	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 and Over.	Unknown.	White.	Colored.	American.	Foreign.	Not Reported.	Single.	Married.	Widowed or Divorced.	Not Reported.	Total
117. Simple peritonitis (nonpuerperal).....	1	2						36	1	35	2		12	19	6		37
118. Other diseases of the digestive system (cancer and tuberculosis excepted).....			1					8		5	3			7	1		8
VI. NONPUERPERAL DISEASES OF THE GENITO- URINARY SYSTEM AND ANNEXA.																	
119. Acute nephritis.....	375	359	237	122	31	7	3	2,612	112	2,281	414	29	361	1,425	925	13	2,724
120. Bright's disease.....	10	13	16	11	2	1		203	10	187	26		65	95	52	1	213
121. Chyluria.....	308	293	175	88	20	6	3	1,917	80	1,639	332	26	211	1,034	740	12	1,997
122. Other diseases of the kidneys and annexa.....	5	7	4	2	1			69	2	61	10		26	30	15		71
123. Calculi of the urinary passages.....	4		3					24		20	4		4	15	5		24
124. Diseases of the bladder.....	15	17	17	8	4			94		77	15	2	11	41	42		94
125. Diseases of the urethra, urinary abscess, etc.....		1						5		1	6		2	1	3		6
126. Diseases of the prostate.....	25	22	21	11	4			110	5	95	19	1	10	73	32		115
127. Nonpuerperal diseases of the male genital organs.....								2		2	2		2		2		2
128. Uterine hemorrhage (nonpuerperal).....								4		4				3	1		4
129. Uterine tumor (noncancerous).....	3	3	1					47	5	49	3		5	28	19		52
130. Other diseases of the uterus.....		1		1				29		27	2		5	21	3		29
131. Cysts and other tumors of the ovary.....	4	2						34	3	36	1		5	25	7		37
132. Salpingitis and other diseases of the female genital organs.....								71	6	75	2		14	58	5		77
133. Nonpuerperal diseases of the breast (cancer excepted).....																	
VII. THE PUERPERAL STATE.																	
134. Accidents of pregnancy.....								485	8	458	34	1	20	461	11	1	493
135. Puerperal hemorrhage.....								45		44	1			45			45
136. Other accidents of labor.....								14		10	4			13	1		14
137. Puerperal septicæmia.....								25		22	3			24	1		25
138. Puerperal albuminuria and convulsions.....								286	7	274	18	1	15	270	7	1	293
								78	1	73	6		5	73			79

139. Puerperal pneumonia, alba dolens, embolus, sudden death.....	4	32	1	478	47	318	113	1,727	1,145	183	198	172	19	3	409	3	409
140. Following childbirth (not otherwise defined).....	3	32	1	478	47	318	113	1,727	1,145	183	198	172	19	3	409	3	409
141. Puerperal diseases of the breast.....	4	32	1	478	47	318	113	1,727	1,145	183	198	172	19	3	409	3	409
VIII. DISEASES OF THE SKIN AND CELLULAR TISSUE.																	
142. Gangrene.....	19	23	16	8	4	145	4	132	15	2	43	58	46	2	149		
143. Furuncle.....	15	14	13	7	4	81	2	68	13	2	9	38	34	2	83		
144. Acute abscess.....	2	3	2	2	2	18		18			8	7	3		18		
145. Other diseases of the skin and annexa.....	2	2	2	1	1	19	2	20	1		13	5	3		21		
	2	4	1			27		26	1		13	8	6		27		
IX. DISEASES OF THE BONES AND THE ORGANS OF LOCOMOTION.																	
146. Diseases of the bones (tuberculosis excepted).....	1	3	2			41		39	2		18	20	3		41		
147. Diseases of the joints (tuberculosis and rheumatism excepted).....	1	3	2			34		32	2		16	15	3		34		
148. Amputations.....						7		7			2	5			7		
149. Other diseases of the organs of locomotion.....																	
X. MALFORMATIONS.																	
150. Congenital malformations (stillbirths not included):						470	8	478			478				478		
A. Hydrocephalus.....						46	1	47			47				47		
B. Congenital malformation of the heart.....						312	6	318			318				318		
C. Other congenital malformations.....						112	1	113			113				113		
						1,688	39	1,727			1,727				1,727		
XI. EARLY INFANCY.																	
151. Congenital debility, icterus and scelerema:						1,121	24	1,145			1,145				1,145		
A. Premature birth.....						184	9	193			193				193		
B. Congenital debility, atrophy, marasmus, etc.....						195	3	198			198				198		
152. Other causes peculiar to early infancy:						169	3	172			172				172		
A. Injuries at birth.....						19		19			19				19		
B. Other causes peculiar to early infancy.....																	
153. Lack of care.....																	
XII. OLD AGE.																	
154. Senility.....	33	75	113	87	67	19	1	396	12	313	93+	3	12	98	296	3	409
	33	75	113	87	67	19	1	396	12	313	93+	3	12	98	296	3	409

† 1 Indian.

176. Injuries by animals.....	4	4	3	1	1	85	79	6	43	28	14	85
177. Starvation.....	2	1	1	1	1	12	1	4	1	3	3	1
178. Excessive cold.....	10	9	5	4	2	80	58	21	21	37	23	13
179. Effects of heat.....						21	21		9	12	1	82
180. Lightning.....												21
181. Electricity (lightning excepted).....						38	36	1	15	20	2	38
182. Homicide by firearms.....	1					71	77	12*	31	47	11	92
183. Homicide by cutting or piercing instruments.....						11	9	2	5	5	1	12
184. Homicide by other means.....						17	18	1	6	12	3	1
185. Fractures (cause not specified).....	1	1	1		1	7	5	2	3	3	1	19
186. Other external violence.....		1	1			78	79	2	67	9	5	7
				2		64	62	3	49	8	8	81
XIV. ILL-DEFINED DISEASES.												
187. Ill-defined organic disease.....	1	1				2	1	1	1	1		68
188. Sudden death.....												2
189. Ill-defined, or unspecified.....	1	3		2	2	62	60	2	48	6	8	1
Total deaths from all causes.....	2,883	2,626	1,899	1,031	335	76	31,309	3,697†	13,043	13,941	8,022	65
							1,282	325				220
							33,945					35,231

*1 Chinese. † 1 Indian. † Includes 2 Chinese, 2 Indians; total, 4.

TABLE No. 3.
Deaths in Indiana by Months, Counties, Ages, Sex, Color, Nationality and Conjugal Condition, for Year 1911.

COUNTIES.	Sex.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Adams.....	Total.....	16	13	16	18	13	13	18	23	10	8	8	23
	Males.....	10	7	10	11	7	6	13	9	1	1	6	11
	Females.....	6	6	6	7	6	7	5	14	9	2	2	12
Allen.....	Total.....	115	100	91	88	113	88	80	94	71	99	87	88
	Males.....	51	48	45	46	57	54	47	48	43	58	52	45
	Females.....	64	52	46	42	56	34	33	46	28	41	35	43
Bartholomew.....	Total.....	25	30	34	30	28	21	24	35	15	26	32	26
	Males.....	11	13	20	18	14	11	15	23	9	14	16	12
	Females.....	14	17	14	12	14	10	19	12	6	12	17	14
Benton.....	Total.....	16	14	10	10	14	8	5	5	3	11	9	7
	Males.....	7	8	3	7	9	6	4	4	1	1	2	2
	Females.....	9	6	7	3	5	2	1	1	2	7	7	5
Blackford.....	Total.....	24	17	15	19	13	12	17	15	17	14	17	15
	Males.....	9	9	8	11	10	9	11	6	12	5	6	9
	Females.....	15	8	7	8	3	3	6	9	5	9	11	6
Boone.....	Total.....	39	21	27	24	24	12	24	21	26	18	24	22
	Males.....	12	12	13	14	16	4	17	19	14	8	16	9
	Females.....	18	9	14	10	8	8	7	2	12	9	8	13
Brown.....	Total.....	4	8	2	12	8	5	8	6	5	5	5	7
	Males.....	3	4	1	6	4	2	5	1	1	3	3	6
	Females.....	1	4	1	6	4	3	3	5	2	2	2	1
Carroll.....	Total.....	22	17	16	18	14	10	23	12	12	10	14	18
	Males.....	11	11	12	11	6	4	10	7	5	4	8	10
	Females.....	11	6	4	7	8	6	13	5	7	6	6	8
Cass.....	Total.....	60	44	53	46	42	26	39	35	40	37	39	50
	Males.....	38	21	31	27	24	11	23	16	22	20	23	29
	Females.....	24	23	22	19	18	15	16	19	18	17	16	21

Clark.....	33	32	38	50	41	32	53	30	30	29	31	41
Males.....	17	13	20	30	16	19	28	12	18	16	15	19
Females.....	16	19	18	20	25	13	25	18	11	11	16	22
Clay.....	31	37	42	38	40	27	39	42	19	33	35	31
Males.....	16	18	24	24	23	14	23	19	13	13	22	11
Females.....	15	19	18	14	17	13	16	23	6	20	13	20
Clinton.....	31	27	32	28	22	28	23	18	20	27	26	27
Males.....	14	12	9	13	12	11	7	9	11	16	11	11
Females.....	17	15	23	15	10	7	16	9	9	11	15	7
Crawford.....	21	16	10	17	10	16	6	16	12	14	11	8
Males.....	10	6	5	7	4	8	3	10	9	9	6	2
Females.....	11	9	5	10	6	8	3	6	3	5	5	6
Davies.....	30	34	23	33	27	17	32	20	20	31	25	36
Males.....	12	17	13	13	12	9	9	21	14	20	22	22
Females.....	18	17	10	20	15	8	11	6	11	11	13	14
Dearborn.....	32	24	29	33	25	17	19	21	11	11	22	27
Males.....	20	12	13	12	14	7	6	13	7	8	13	14
Females.....	12	12	16	20	11	10	13	8	4	3	9	13
Deatur.....	23	19	26	25	21	22	22	17	22	23	21	22
Males.....	14	8	17	15	11	12	9	8	14	12	8	14
Females.....	9	11	9	10	10	10	13	9	8	11	13	8
Detailb.....	33	27	24	22	27	18	21	27	24	17	16	14
Males.....	21	15	17	10	14	6	13	13	15	11	7	7
Females.....	12	12	7	12	13	12	8	14	9	6	9	7
Delaware.....	46	56	70	51	48	45	47	54	51	50	52	41
Males.....	20	31	31	27	28	22	22	35	25	21	24	23
Females.....	26	25	39	24	20	23	25	19	26	29	28	18
Dubois.....	21	24	23	26	16	25	25	8	11	18	14	22
Males.....	10	9	15	14	11	11	15	3	10	8	10	10
Females.....	11	15	8	12	5	14	10	5	3	8	6	12
Elkhart.....	57	58	59	64	46	36	55	41	48	34	47	37
Males.....	33	30	31	30	18	33	21	30	18	18	26	19
Females.....	24	28	28	34	28	18	22	20	18	16	21	18
Fayette.....	7	22	28	19	17	21	16	21	13	18	15	11
Males.....	3	8	11	10	10	10	9	9	6	10	8	8
Females.....	4	14	17	9	7	11	8	12	7	8	7	3

TABLE No. 3—Continued.

COUNTIES.	Sex.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Floyd.....	Total.....	51	28	35	37	46	29	46	35	24	34	44	36
	Males.....	30	19	23	18	23	13	26	20	14	15	20	18
	Females.....	21	9	15	19	23	16	20	15	10	19	24	18
Fountain.....	Total.....	26	25	26	19	16	14	22	18	27	20	18	18
	Males.....	11	15	16	13	10	5	12	10	13	8	7	9
	Females.....	15	10	10	6	6	9	10	8	14	12	11	9
Franklin.....	Total.....	25	18	23	19	12	10	13	23	14	14	12	9
	Males.....	11	12	14	10	4	4	3	15	4	5	7	5
	Females.....	14	6	14	9	8	6	10	8	10	9	5	4
Fulton.....	Total.....	28	15	15	14	22	24	11	16	18	14	13	13
	Males.....	13	6	7	4	7	13	4	8	9	7	1	8
	Females.....	15	9	8	10	15	11	7	8	9	7	12	5
Gibson.....	Total.....	35	43	37	24	29	31	52	28	30	30	36	24
	Males.....	20	22	19	16	14	13	24	11	17	18	14	10
	Females.....	15	21	18	8	15	18	28	17	13	12	22	14
Grant.....	Total.....	54	72	78	68	48	61	54	69	58	78	60	73
	Males.....	31	41	47	33	33	39	37	40	39	58	41	53
	Females.....	23	31	31	30	15	22	17	29	19	20	19	20
Greene.....	Total.....	48	43	42	36	35	35	49	28	28	32	35	26
	Males.....	25	21	28	20	17	21	29	11	19	18	19	13
	Females.....	23	22	14	16	18	14	20	17	9	14	16	13
Hamilton.....	Total.....	30	30	47	31	22	26	33	22	17	27	22	32
	Males.....	14	13	26	17	11	11	16	13	10	19	12	15
	Females.....	16	17	21	14	11	15	17	9	7	8	10	17
Hancock.....	Total.....	30	14	30	24	27	14	21	23	20	21	15	11
	Males.....	15	4	14	16	15	6	15	11	12	14	7	7
	Females.....	15	10	16	8	12	8	6	12	8	7	8	4
Harrison.....	Total.....	22	12	16	22	21	9	21	16	10	20	17	20
	Males.....	10	5	9	11	10	5	13	11	8	8	11	9
	Females.....	12	7	7	11	11	4	8	5	5	12	6	11

Hendricks	Total	26	22	19	16	20	18	16	22	18	19	17	17
	Males	12	13	7	9	9	10	9	13	15	5	6	13
	Females	14	9	12	7	11	8	7	9	3	14	11	4
Henry	Total	43	34	38	29	34	28	24	25	39	38	33	40
	Males	23	21	23	18	17	13	10	13	18	16	20	24
	Females	20	13	15	11	17	15	14	10	21	22	13	16
Howard	Total	30	32	39	30	30	37	36	35	38	20	24	34
	Males	14	20	15	18	14	20	20	19	21	10	16	19
	Females	16	12	24	12	16	17	16	16	17	10	9	15
Huntington	Total	31	18	41	28	24	20	27	35	25	32	19	18
	Males	17	8	16	13	12	8	15	18	11	13	11	8
	Females	14	10	25	15	12	12	12	17	14	19	8	10
Jackson	Total	35	23	31	27	25	17	22	37	23	21	20	26
	Males	14	10	14	11	13	11	10	20	12	9	10	13
	Females	21	13	17	16	12	6	12	17	11	12	10	13
Jasper	Total	13	9	13	9	11	12	14	11	11	9	10	16
	Males	8	5	7	5	2	8	8	8	7	2	5	7
	Females	5	4	6	4	9	4	6	3	4	7	5	9
Jay	Total	22	36	32	41	18	13	23	25	21	29	26	25
	Males	16	18	15	21	9	6	12	14	9	18	15	8
	Females	6	18	17	20	9	7	11	11	12	11	11	17
Jefferson	Total	34	32	30	39	23	22	33	24	21	33	33	25
	Males	17	21	17	15	12	13	20	16	7	19	16	13
	Females	17	11	13	24	11	9	13	8	14	14	17	12
Jennings	Total	18	23	27	13	13	15	14	11	12	11	12	14
	Males	9	12	10	7	8	9	11	7	6	7	6	7
	Females	9	11	17	6	5	6	3	4	5	5	6	7
Johnson	Total	27	25	19	18	18	21	17	20	21	20	22	15
	Males	11	11	9	12	11	11	9	12	9	12	11	6
	Females	16	14	10	6	7	10	8	8	12	8	11	9
Knox	Total	50	47	51	52	37	41	38	43	32	52	49	48
	Males	24	29	23	29	23	25	23	23	24	27	27	32
	Females	26	18	28	23	14	16	15	16	8	25	22	16
Kosciusko	Total	33	34	28	36	38	23	30	31	30	29	27	26
	Males	14	14	11	24	14	14	13	21	18	17	12	14
	Females	19	20	17	16	14	9	17	10	12	12	15	14

TABLE No. 3—Continued.

COUNTIES.	Sex.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Lagrange.....	Total.....	25	18	16	22	15	11	16	5	22	14	12	18
	Males.....	20	10	8	8	8	7	7	9	9	8	2	10
	Females.....	5	8	8	14	7	4	7	4	13	6	10	8
Lake.....	Total.....	109	83	81	110	77	73	114	111	112	109	98	96
	Males.....	71	52	51	67	45	38	64	62	70	66	62	62
	Females.....	38	31	30	43	32	35	50	49	42	43	36	43
Laporte.....	Total.....	67	64	52	61	52	42	54	53	44	45	48	51
	Males.....	33	34	30	28	24	17	36	33	27	23	29	30
	Females.....	34	30	22	33	28	25	18	20	17	22	19	21
Lawrence.....	Total.....	48	40	36	48	47	32	32	30	33	32	45	24
	Males.....	25	20	16	20	26	20	18	20	18	15	24	11
	Females.....	23	20	20	28	21	12	14	10	15	17	21	13
Madison.....	Total.....	81	76	80	82	58	46	68	71	58	55	60	53
	Males.....	38	47	42	46	29	24	41	34	30	30	32	29
	Females.....	43	29	38	36	29	22	27	37	28	25	28	24
Marion.....	Total.....	351	331	362	366	318	292	331	315	278	312	306	333
	Males.....	188	184	193	213	180	146	166	166	175	156	154	182
	Females.....	163	147	169	153	138	146	165	140	121	156	152	151
Marshall.....	Total.....	23	29	29	32	25	18	20	23	11	22	22	29
	Males.....	15	14	10	15	11	6	15	13	5	15	12	16
	Females.....	8	15	19	17	14	12	5	10	6	7	10	13
Martin.....	Total.....	12	18	17	5	13	11	10	6	13	8	14	16
	Males.....	7	7	14	2	7	5	5	5	3	7	8	8
	Females.....	5	11	3	3	6	6	5	1	10	1	6	8
Miami.....	Total.....	39	33	39	26	38	23	43	28	24	30	18	31
	Males.....	24	18	17	11	17	14	22	15	15	16	13	18
	Females.....	15	15	22	15	21	9	21	13	9	14	5	13
Monroe.....	Total.....	34	21	34	19	27	21	18	21	24	23	19	27
	Males.....	13	10	20	14	13	8	12	12	11	10	9	16
	Females.....	21	11	14	5	14	13	6	9	13	13	10	12

Montgomery.....	Total.....	45	37	33	26	20	23	28	35	27	36	19	24
	Males.....	19	16	15	15	9	7	12	25	16	22	11	19
	Females.....	26	21	18	11	11	16	16	10	11	14	8	5
Morgan.....	Total.....	36	29	25	19	18	13	16	24	18	28	23	25
	Males.....	13	13	17	5	10	7	9	12	6	17	13	16
	Females.....	23	16	8	14	8	6	7	12	12	11	10	9
Newton.....	Total.....	9	8	4	14	3	8	8	6	5	7	11	7
	Males.....	6	5	3	9	3	4	4	2	3	3	5	5
	Females.....	3	3	1	5	3	4	4	4	2	4	6	2
Noble.....	Total.....	24	31	20	16	30	19	24	19	25	17	20	24
	Males.....	14	10	11	9	17	12	14	13	13	8	4	11
	Females.....	10	21	9	7	13	7	10	6	12	9	16	13
Ohio.....	Total.....	6	6	5	7	7	4	4	1	1	4	5	2
	Males.....	3	3	3	2	2	4	3	1	1	3	5	1
	Females.....	5	3	2	5	4	4	1	1	1	1	1	1
Orange.....	Total.....	14	14	21	30	21	25	11	15	7	21	13	28
	Males.....	7	8	13	17	8	14	5	8	5	8	8	20
	Females.....	7	6	8	13	13	11	6	7	2	13	5	8
Owen.....	Total.....	16	17	19	21	5	18	14	11	11	8	16	10
	Males.....	6	8	6	10	2	8	5	3	7	4	9	8
	Females.....	10	9	13	11	3	10	9	8	4	4	7	2
Parke.....	Total.....	39	23	18	20	18	25	24	16	12	18	25	19
	Males.....	17	13	7	7	10	10	15	8	3	10	10	12
	Females.....	22	10	11	13	8	15	9	8	9	8	15	7
Perry.....	Total.....	22	29	28	19	15	19	29	20	10	18	8	19
	Males.....	9	14	15	8	9	8	11	13	5	7	4	12
	Females.....	13	15	13	11	6	11	18	7	5	11	4	7
Pike.....	Total.....	19	23	28	29	18	16	19	23	15	21	19	20
	Males.....	11	9	12	10	12	7	13	10	9	8	10	12
	Females.....	8	14	16	19	6	9	6	13	6	13	9	8
Porter.....	Total.....	26	21	17	30	17	19	22	18	20	17	16	8
	Males.....	12	7	12	21	15	13	16	9	10	9	10	7
	Females.....	14	14	5	9	2	6	6	9	10	8	6	1
Posey.....	Total.....	28	22	22	20	18	17	36	24	19	23	25	34
	Males.....	14	12	13	11	9	9	25	13	8	12	21	21
	Females.....	14	10	9	9	9	8	11	11	11	11	11	13

TABLE No. 3—Continued.

COUNTIES.	Sex.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Pulaski	Total	20	10	10	16	11	7	11	12	14	13	10	14
	Males	14	4	4	6	5	4	6	6	8	12	3	10
	Females	6	6	6	10	6	3	5	6	6	1	7	4
Putnam	Total	23	32	34	16	18	19	23	20	18	15	15	18
	Males	13	22	21	9	12	8	13	17	11	11	6	11
	Females	10	10	13	7	6	11	8	3	7	9	10	7
Randolph	Total	31	28	31	36	35	25	24	18	31	23	27	20
	Males	12	13	21	14	21	11	14	9	18	10	10	10
	Females	19	15	10	22	14	14	10	9	13	13	17	10
Ripley	Total	35	26	22	26	21	23	28	21	21	20	22	22
	Males	16	14	11	10	9	15	17	12	8	14	13	10
	Females	19	12	11	16	12	8	11	9	13	6	9	12
Rush	Total	16	23	24	18	21	16	16	20	16	23	21	19
	Males	8	17	9	8	18	10	3	11	8	9	12	13
	Females	8	6	15	10	13	6	13	9	8	14	9	6
Scott	Total	17	9	12	7	9	6	16	10	7	9	10	8
	Males	4	7	6	5	3	4	10	2	3	3	5	5
	Females	13	2	6	2	6	2	6	8	4	4	7	3
Shelby	Total	31	30	34	28	24	29	27	31	31	32	35	30
	Males	16	10	22	17	11	17	18	18	12	16	20	16
	Females	15	20	12	11	13	12	9	13	10	16	15	14
Spencer	Total	20	17	33	27	13	26	29	18	10	18	28	28
	Males	12	7	20	11	9	13	17	8	4	10	19	15
	Females	8	10	13	16	4	13	12	10	6	8	9	1
Starke	Total	10	13	17	17	8	9	5	11	10	10	4	8
	Males	6	5	11	9	2	5	4	4	6	7	4	4
	Females	4	8	6	8	6	4	1	5	3	2	4	4
Steuben	Total	21	12	12	16	18	13	20	13	16	11	20	12
	Males	11	6	7	6	6	7	9	6	10	7	12	6
	Females	10	6	5	9	12	7	11	7	6	4	8	6

St. Joseph.....	Total.....	93	83	108	106	93	89	108	90	93	104	85	81
Males.....	47	44	59	53	56	52	64	64	48	53	50	44	51
Females.....	46	39	49	53	37	37	44	44	42	40	54	41	30
Sullivan.....	Total.....	47	34	36	33	29	38	34	29	29	32	35	35
Males.....	22	17	22	16	14	14	24	15	16	13	16	20	19
Females.....	25	17	14	17	15	14	19	19	13	16	16	15	16
Switzerland.....	Total.....	10	13	13	12	10	6	8	10	10	6	12	12
Males.....	2	9	8	5	3	4	3	3	3	6	5	4	8
Females.....	8	4	5	7	7	2	5	5	7	4	1	8	4
Tippecanoe.....	Total.....	58	58	56	65	46	35	47	49	44	40	47	66
Males.....	28	28	34	37	26	21	23	28	27	28	18	24	33
Females.....	30	30	22	28	20	14	24	24	22	16	22	23	33
Tipton.....	Total.....	17	14	26	20	14	12	18	24	8	14	12	16
Males.....	9	7	8	11	6	6	6	8	9	2	8	8	8
Females.....	8	7	18	9	8	6	10	10	15	6	6	4	8
Union.....	Total.....	8	9	9	9	4	8	5	6	4	8	6	4
Males.....	3	6	4	5	2	7	3	3	4	2	4	1	2
Females.....	5	3	5	4	2	1	2	2	2	2	4	5	2
Vanderburgh.....	Total.....	124	126	125	116	103	121	124	88	82	113	109	96
Males.....	70	58	71	62	63	67	61	61	50	52	56	80	88
Females.....	54	68	54	54	40	54	63	63	38	30	57	59	38
Vermillion.....	Total.....	24	26	29	28	27	11	14	23	16	22	28	26
Males.....	12	14	19	15	15	5	10	10	10	10	8	12	14
Females.....	12	12	10	13	12	6	4	4	13	6	14	16	12
Vigo.....	Total.....	127	86	132	113	105	89	156	91	85	107	115	120
Males.....	73	42	65	52	49	46	46	87	53	41	59	62	67
Females.....	54	44	67	61	56	43	69	69	38	44	48	53	53
Walsh.....	Total.....	35	38	29	39	21	21	25	25	28	13	30	25
Males.....	14	18	13	11	13	10	11	17	17	16	6	12	13
Females.....	21	20	16	19	8	11	14	8	8	12	7	18	12
Warren.....	Total.....	9	11	19	11	8	11	7	14	13	8	10	10
Males.....	5	5	10	6	5	5	3	3	7	12	5	7	6
Females.....	4	6	9	5	3	6	4	4	7	1	3	3	4
Warrick.....	Total.....	21	17	29	39	27	32	20	19	25	25	15	16
Males.....	6	9	12	17	15	19	14	14	7	12	15	4	7
Females.....	15	8	17	22	12	13	6	6	12	13	10	11	9

TABLE No. 3—Continued.

COUNTIES.	Sex.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Washington.....	Total.....	25	26	26	16	14	8	18	20	16	16	8	21
	Males.....	19	9	16	9	6	3	17	15	10	4	3	9
	Females.....	6	17	10	7	8	5	11	5	6	12	5	12
Wayne.....	Total.....	63	45	62	59	54	41	57	45	50	61	43	60
	Males.....	36	24	31	31	24	16	37	25	29	31	21	26
	Females.....	27	21	31	28	30	25	20	20	21	30	22	34
Wells.....	Total.....	26	20	23	17	21	13	18	15	17	17	11	11
	Males.....	11	12	9	7	16	6	8	8	7	7	7	6
	Females.....	15	8	14	10	5	7	10	7	10	10	5	5
White.....	Total.....	19	19	18	19	14	10	17	22	24	16	14	20
	Males.....	6	11	7	7	10	5	8	16	12	6	8	10
	Females.....	13	8	11	12	4	5	9	6	12	10	6	10
Whitley.....	Total.....	20	20	19	23	20	12	13	8	12	15	22	18
	Males.....	8	11	11	7	9	4	7	3	6	9	10	7
	Females.....	12	9	8	16	11	8	6	5	6	6	12	11
Total males.....		1,772	1,597	1,776	1,692	1,501	1,310	1,674	1,544	1,403	1,474	1,420	1,572
Total females.....		1,648	1,495	1,588	1,555	1,325	1,204	1,377	1,241	1,124	1,321	1,338	1,282
Grand total.....		3,420	3,092	3,364	3,247	2,826	2,514	3,051	2,785	2,527	2,795	2,758	2,854

TABLE No. 3—Continued.

Deaths in Indiana by Months, Counties, Ages, Sex, Color, Nationality and Conjugal Condition, for Year 1911.

COUNTIES.	Sex.	Under 1	1	2	3	4	Under 5	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69
Adams.....	Total.....	20	7	2	2	1	41	4	3	6	1	8	10	6	7	2	10	4	11	19
	Males.....	19	4	2	1	1	27	3	3	5	1	2	2	3	3	2	8	3	6	13
	Females.....	10	3	.....	1	.....	14	1	.....	.....	.....	6	7	3	4	.....	2	1	5	6
Allen.....	Total.....	152	25	13	10	2	202	28	9	31	51	48	43	57	42	57	60	65	72	83
	Males.....	83	11	6	6	1	107	13	5	16	21	21	20	27	16	28	33	37	46	56
	Females.....	69	14	7	4	1	95	15	4	15	30	27	23	30	26	29	27	28	26	27
Bartholomew.....	Total.....	34	7	10	1	2	54	5	7	12	11	16	9	18	9	11	16	22	14	24
	Males.....	20	4	7	1	1	33	3	5	3	4	10	2	12	2	8	6	12	5	8
	Females.....	14	3	3	.....	1	21	2	2	9	7	6	7	6	7	3	10	10	9	16
Benton.....	Total.....	15	5	1	1	.....	22	2	.....	6	3	2	4	3	2	3	5	8	5	11
	Males.....	9	5	.....	1	.....	14	1	.....	4	1	2	1	.....	1	2	3	5	2	6
	Females.....	6	.....	1	.....	.....	8	1	.....	2	2	.....	3	3	1	1	2	3	3	5
Blackford.....	Total.....	37	9	3	1	.....	50	3	3	4	13	9	7	5	9	9	10	14	16	9
	Males.....	24	5	1	1	.....	31	2	3	3	2	6	4	2	5	6	6	8	9	3
	Females.....	13	4	2	.....	.....	19	1	3	1	11	3	3	3	4	4	4	6	8	6
Boone.....	Total.....	38	6	1	2	2	49	5	5	9	7	4	7	12	13	9	10	12	20	23
	Males.....	22	2	1	1	1	26	3	3	6	3	4	4	4	5	4	7	10	13	11
	Females.....	16	4	.....	1	2	23	2	2	3	4	.....	3	7	8	5	3	2	7	12
Brown.....	Total.....	12	3	3	1	1	20	1	1	.....	4	4	3	2	1	3	8	1	5	3
	Males.....	7	3	3	.....	1	14	1	1	.....	3	4	2	1	1	1	4	1	4	3
	Females.....	5	.....	.....	1	.....	6	.....	.....	.....	1	.....	1	1	.....	2	4	.....	1	.....
Carroll.....	Total.....	24	2	1	1	3	31	3	4	9	6	7	3	5	3	2	1	7	10	13
	Males.....	15	2	1	.....	2	20	1	3	3	2	2	2	3	2	1	5	5	9	7
	Females.....	9	.....	.....	1	1	11	2	1	6	4	5	1	2	1	1	2	2	4	10

TABLE No. 3—Continued.

COUNTIES.	Under 1	1	2	3	4	Under 5	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69
Cass.....	Total..... Males..... Females.....	13 27 24	2 6 1	7 3 4	3 2 1	76 39 37	8 5 3	13 6 8	10 4 4	17 8 13	22 9 13	20 8 12	28 13 15	23 16 10	21 13 5	34 19 15	32 22 10	36 17 17	41 19 19
Clark.....	Total..... Males..... Females.....	7 37 35	3 1 2	1 1 1	1 1 1	84 41 43	10 6 4	7 4 3	12 8 4	16 11 5	25 15 10	14 8 6	17 9 8	18 12 7	19 12 7	22 10 12	24 17 17	31 15 16	28 15 13
Clay.....	Total..... Males..... Females.....	16 43 29	12 10 6	3 8 4	1 2 1	104 63 41	12 6 6	9 6 3	17 8 9	17 8 9	20 11 9	17 6 11	19 8 11	10 5 5	19 9 10	19 3 16	24 15 9	27 22 5	28 17 11
Clinton.....	Total..... Males..... Females.....	35 21 14	7 3 4	6 2 2	3 2 1	55 28 27	5 2 3	5 2 3	12 5 7	9 2 7	9 2 7	9 3 6	10 4 6	13 8 7	8 6 5	16 10 7	15 7 8	22 15 7	29 11 18
Crawford.....	Total..... Males..... Females.....	23 13 10	7 4 3	3 2 1	2 2 1	36 21 15	4 1 3	3 1 2	6 3 3	10 4 6	5 2 3	3 2 2	4 3 1	6 3 2	.....	7 4 3	9 5 4	5 4 1	18 7 11
Davies.....	Total..... Males..... Females.....	51 27 24	11 6 5	7 4 3	5 1 4	77 40 37	12 6 6	9 6 3	13 9 4	12 7 5	12 7 8	13 6 6	8 6 2	12 7 7	10 4 6	14 8 6	12 6 6	23 17 6	18 9 9
Dearborn.....	Total..... Males..... Females.....	25 18 7	3 6 1	4 4 3	3 3 1	36 24 12	3 3 2	5 3 2	4 3 1	9 5 4	6 2 4	9 5 4	8 2 6	11 8 3	11 5 6	16 13 4	12 8 11	19 8 11	22 7 15
Decatur.....	Total..... Males..... Females.....	22 14 8	2 2 1	1 1 1	2 2 1	27 18 9	3 2 2	2 1 2	7 3 4	12 7 5	4 3 3	11 6 5	6 3 3	6 3 3	9 3 6	10 6 4	22 10 12	17 11 6	21 11 10
Detailb.....	Total..... Males..... Females.....	36 23 13	9 5 4	3 2 1	.....	48 18	2 2 2	5 3 2	5 3 2	11 5 6	9 5 4	6 4 2	8 6 3	13 6 6	8 3 5	7 5 2	17 10 7	19 10 10	21 11 10

Delaware.....	105	23	4	3	9	144	9	8	22	30	28	23	19	28	32	20	27	31	52
Total.....	62	14	2	2	5	85	3	5	8	16	12	9	8	15	16	14	13	18	28
Males.....	43	9	2	1	4	59	6	3	14	14	16	14	11	13	16	6	14	13	24
Females.....																			
Dubois.....	54	10	5	3	1	73	6	4	6	8	1	15	9	12	8	3	10	13	16
Total.....	34	4	3	1	1	43	5	3	3	3	4	7	2	4	3	2	6	6	10
Males.....	20	6	2	2	...	30	1	1	3	4	...	8	7	8	5	1	5	7	6
Females.....																			
Elkhart.....	66	16	8	4	3	97	10	8	26	23	18	18	22	13	14	22	38	42	53
Total.....	39	11	3	2	1	56	5	6	11	13	10	4	12	7	7	9	19	20	24
Males.....	27	5	5	2	2	41	5	2	15	10	8	14	10	6	7	13	19	22	29
Females.....																			
Fayette.....	22	7	3	1	4	37	4	2	3	11	7	7	6	6	2	10	13	17	16
Total.....	9	4	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Males.....	13	3	2	1	3	22	4	1	1	9	4	2	4	2	1	6	7	8	9
Females.....																			
Floyd.....	59	11	8	1	2	81	5	12	11	19	19	11	15	18	13	22	23	32	38
Total.....	28	7	3	...	...	39	3	7	5	11	9	6	5	12	11	10	13	16	21
Males.....	31	4	5	1	1	42	2	5	6	8	10	5	10	6	2	12	10	16	17
Females.....																			
Fountain.....	45	5	2	3	1	56	7	7	6	11	5	5	4	12	7	10	9	19	20
Total.....	23	4	1	1	...	29	6	5	4	7	...	4	2	6	4	4	3	10	9
Males.....	22	1	1	2	1	27	1	2	2	4	...	5	1	6	3	6	6	9	11
Females.....																			
Franklin.....	26	7	2	1	1	37	3	4	5	5	1	4	10	4	8	3	7	11	22
Total.....	13	5	1	...	...	19	1	2	2	2	1	2	2	2	2	4	5	6	10
Males.....	13	2	1	1	1	18	2	2	3	3	...	2	8	2	4	3	2	5	12
Females.....																			
Fulton.....	27	3	2	3	...	35	4	2	4	7	7	7	9	7	10	12	6	18	18
Total.....	14	1	1	...	...	16	3	1	1	1	2	3	4	3	3	7	4	8	10
Males.....	13	2	1	3	...	19	1	1	3	6	5	4	5	4	7	5	2	10	8
Females.....																			
Gibson.....	70	17	8	3	3	101	9	6	19	14	20	19	14	15	13	20	18	18	27
Total.....	40	10	1	...	...	51	4	4	9	9	7	8	6	8	5	10	13	9	14
Males.....	30	7	7	3	3	50	5	2	10	5	13	11	8	7	8	10	5	9	13
Females.....																			
Grant.....	99	21	8	9	5	142	15	11	15	23	20	24	10	18	22	41	40	48	92
Total.....	55	10	3	5	3	76	8	6	11	13	12	16	4	10	13	24	26	28	80
Males.....	44	11	5	4	2	66	7	5	4	11	14	8	6	8	9	17	14	20	12
Females.....																			
Greene.....	99	23	6	6	3	137	14	4	12	30	16	15	12	14	13	17	21	23	28
Total.....	59	14	1	4	2	80	10	4	4	11	8	7	6	7	9	13	11	11	21
Males.....	40	9	5	2	1	57	4	2	8	19	8	8	6	10	6	8	8	12	7
Females.....																			
Hamilton.....	51	4	4	2	1	62	8	5	12	9	7	9	8	11	12	11	24	19	31
Total.....	27	2	3	1	...	33	3	3	8	3	4	6	2	6	8	6	14	11	16
Males.....	24		1	...	...	29	5	2	4	6	3	3	6	5	4	5	10	8	16
Females.....																			

TABLE No. 3—Continued.

COUNTIES.	Sex.	Under 1	1	2	3	4	Under 5	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69
Hancock.....	Total.....	38	10	2	1	.....	51	8	1	9	11	8	5	17	8	6	13	14	16	20
	Males.....	23	5	1	.....	.....	32	2	.....	4	5	4	2	3	3	4	9	12	9	13
	Females.....	15	5	1	1	.....	19	6	1	5	6	4	3	14	5	2	4	2	7	7
Harrison.....	Total.....	32	5	3	1	1	42	4	2	10	11	4	6	10	5	8	9	8	14	16
	Males.....	21	2	1	.....	1	25	3	1	4	2	2	1	7	3	2	8	3	12	9
	Females.....	11	3	2	1	.....	17	1	1	6	9	2	5	3	2	6	1	5	2	7
Hendricks.....	Total.....	20	7	.....	2	.....	29	3	3	3	9	9	3	6	6	7	15	16	19	20
	Males.....	9	7	.....	2	.....	18	3	3	2	5	5	1	3	4	3	6	8	11	11
	Females.....	11	.....	.....	.....	.....	11	.....	.....	1	4	4	2	3	2	4	9	8	8	9
Henry.....	Total.....	64	11	7	1	1	84	11	6	13	19	16	14	11	14	12	17	14	27	29
	Males.....	37	8	2	.....	1	47	4	3	6	10	13	8	5	7	6	14	8	13	16
	Females.....	27	3	5	1	.....	37	7	3	7	9	3	6	6	7	6	3	6	14	13
Howard.....	Total.....	65	10	7	2	4	88	11	8	13	16	15	11	8	15	10	9	23	24	23
	Males.....	42	4	6	2	3	56	6	3	7	13	9	3	2	11	7	4	13	12	9
	Females.....	23	6	2	.....	1	32	5	5	6	13	6	8	6	4	3	5	10	12	14
Huntington.....	Total.....	33	4	1	.....	4	42	8	10	10	15	6	13	14	12	14	12	17	19	26
	Males.....	17	1	.....	.....	1	19	3	7	6	9	2	4	7	5	6	5	8	16	15
	Females.....	16	3	1	.....	3	23	5	3	4	6	4	9	7	7	8	7	9	11	11
Jackson.....	Total.....	50	5	4	2	2	63	10	5	8	15	12	11	12	13	7	12	12	20	25
	Males.....	20	2	.....	1	2	26	6	3	4	9	4	3	7	6	3	7	7	11	10
	Females.....	30	3	4	1	.....	37	4	2	4	6	8	8	5	7	4	5	5	9	15
Jasper.....	Total.....	23	5	4	1	.....	33	1	3	1	8	3	2	3	4	6	4	5	10	19
	Males.....	10	1	4	1	.....	16	1	1	1	2	2	.....	2	3	3	2	3	5	12
	Females.....	13	4	.....	.....	.....	17	.....	2	.....	6	1	2	1	1	3	2	2	5	7
Jay.....	Total.....	39	7	6	.....	2	54	8	4	16	13	9	7	12	12	9	11	20	21	19
	Males.....	19	6	2	.....	1	28	6	2	6	7	6	3	6	7	2	4	18	9	6
	Females.....	20	1	4	.....	1	26	2	2	11	6	3	4	6	5	7	7	2	12	13

Jefferson.....	31	7	1	3	3	45	3	3	3	5	10	9	10	9	22	23	14	29	23	19	30
Males.....	20	5	1	3	3	27	1	3	3	4	1	6	7	6	10	12	7	15	16	16	16
Females.....	11	2	.....	.....	.....	18	2	.....	.....	.....	.....	3	3	3	12	11	7	14	7	9	14
Jennings.....	25	7	2	1	1	36	1	4	3	3	9	8	10	5	7	5	5	6	10	13	13
Males.....	13	3	1	1	1	19	.....	1	2	2	4	7	5	2	4	4	1	4	4	8	8
Females.....	12	4	1	.....	.....	17	1	1	1	1	5	1	5	3	3	3	4	2	6	5	5
Johnson.....	36	4	3	3	3	46	7	7	7	3	11	14	7	7	12	12	8	7	13	12	17
Males.....	15	2	2	2	2	22	4	3	4	2	6	8	3	3	3	4	5	4	7	6	11
Females.....	21	1	1	1	1	24	3	4	3	1	5	6	4	4	9	8	3	3	6	6	6
Knox.....	92	24	10	10	6	142	15	16	24	24	24	21	24	20	16	14	21	21	28	37	36
Males.....	63	14	5	5	3	90	7	12	12	12	12	10	12	11	10	10	10	15	25	23	23
Females.....	29	10	5	5	3	52	8	4	12	12	11	12	12	9	6	4	11	13	12	13	13
Kosciusko.....	41	9	3	4	3	60	6	6	6	15	8	11	8	13	8	6	17	15	20	41	41
Males.....	26	4	1	4	1	36	2	3	10	4	4	4	3	5	6	3	7	5	15	21	21
Females.....	15	5	2	.....	.....	24	4	3	5	4	7	5	5	2	3	10	10	5	20	20	20
Lagrange.....	36	8	2	5	.....	51	3	1	6	8	6	6	4	4	2	4	7	8	5	17	10
Males.....	21	5	2	3	.....	31	.....	.....	4	4	3	3	3	1	.....	3	5	3	9	5	5
Females.....	15	3	.....	2	.....	20	3	1	3	4	3	4	3	3	2	1	2	5	5	8	5
Lake.....	413	80	18	7	11	529	25	17	27	47	58	67	48	57	45	43	38	36	36	24	24
Males.....	215	51	9	4	6	285	16	8	17	30	36	47	35	40	33	30	23	24	15	16	16
Females.....	198	29	9	3	5	244	9	9	10	17	22	20	13	17	12	13	15	12	9	9	9
Laporte.....	97	20	6	5	7	135	16	13	16	20	21	24	37	22	30	40	25	37	41	41	41
Males.....	52	14	3	3	1	73	7	8	9	12	9	12	27	12	17	27	13	22	23	23	23
Females.....	45	6	3	2	6	62	9	5	7	8	12	12	10	10	13	13	12	15	18	18	18
Lawrence.....	86	24	6	10	5	131	13	14	15	24	15	15	10	15	21	15	19	19	21	27	27
Males.....	45	10	6	8	3	72	7	8	6	12	7	6	4	8	14	10	10	8	13	15	15
Females.....	41	14	.....	2	2	59	6	6	9	12	8	4	11	7	6	5	9	9	13	12	12
Madison.....	122	17	17	6	6	168	25	16	29	33	23	23	34	25	29	40	46	65	60	60	60
Males.....	60	10	7	4	3	84	16	7	10	13	11	12	18	17	22	24	25	36	38	38	38
Females.....	62	7	10	2	3	84	9	9	19	20	11	11	16	8	7	16	21	29	22	22	22
Marion.....	470	74	54	38	19	655	60	68	118	183	165	199	224	203	207	259	251	254	280	280	280
Males.....	260	35	26	21	14	366	39	34	61	91	80	118	121	108	126	151	137	152	163	163	163
Females.....	210	39	18	17	5	289	21	34	67	92	85	81	103	95	81	108	114	102	117	117	117
Marshall.....	40	7	2	2	1	52	3	2	7	7	9	9	9	8	8	4	16	18	19	30	30
Males.....	23	3	2	2	1	31	1	.....	4	5	6	5	5	3	6	1	7	7	14	13	13
Females.....	17	4	.....	.....	.....	21	2	2	3	2	4	4	4	4	5	3	10	11	5	17	17

TABLE No. 3—Continued.

COUNTIES.	Under 1	1	2	3	4	Under 5	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69
Martin.....	27	5	6	1	1	40	4	2	5	8	5	3	6	4	5	6	4	7	10
Males.....	14	4	4	1	1	24	1	1	2	4	2	2	4	4	3	1	4	3	5
Females.....	13	1	2	...	...	16	3	1	3	4	3	1	2	...	2	5	...	4	5
Miami.....	45	6	7	3	1	60	6	4	13	16	15	14	15	10	8	21	32	22	30
Males.....	29	2	3	1	1	35	4	1	9	8	8	8	10	6	4	12	18	11	16
Females.....	16	4	4	...	...	25	2	3	4	8	7	6	5	4	4	9	14	11	14
Monroe.....	51	10	5	...	4	70	1	4	9	19	14	9	9	15	7	17	12	16	19
Males.....	29	7	1	...	...	37	...	2	3	10	6	6	4	9	3	5	9	6	13
Females.....	22	3	4	...	4	33	1	2	6	9	8	3	5	6	4	12	3	10	6
Montgomery.....	38	4	6	6	1	55	9	4	7	9	6	13	9	17	23	14	19	17	27
Males.....	24	2	4	2	1	33	6	3	5	3	4	4	6	12	7	7	13	11	16
Females.....	14	2	2	4	...	22	3	1	2	6	2	7	3	5	16	7	6	6	11
Morgan.....	52	7	3	1	1	64	7	4	12	5	11	9	12	6	8	10	12	24	13
Males.....	23	4	2	1	1	31	3	3	5	2	8	4	5	4	4	5	9	16	8
Females.....	29	3	1	...	...	33	4	1	7	3	3	5	7	2	4	5	3	8	5
Newton.....	18	...	...	2	1	21	3	1	...	2	6	2	5	2	2	6	6	4	7
Males.....	10	...	...	1	1	12	1	1	...	...	3	...	2	...	...	5	3	3	3
Females.....	8	...	...	1	...	9	2	...	...	2	3	2	3	2	2	1	3	1	4
Noble.....	21	3	1	1	3	29	4	...	4	5	7	9	12	9	9	8	15	18	29
Males.....	14	1	...	1	2	18	1	...	3	2	4	5	8	3	3	3	8	11	13
Females.....	7	2	1	...	1	11	3	...	1	3	3	4	4	6	6	5	7	7	16
Ohio.....	4	...	...	...	...	4	1	...	3	3	...	2	...	...	1	2	2	3	4
Males.....	...	...	...	...	...	1	1	...	2	2	...	1	...	...	...	...	...	2	4
Females.....	3	...	...	...	...	3	...	...	1	1	...	1	...	...	1	2	2	1	1
Orange.....	40	12	6	2	3	63	10	4	5	7	9	6	6	5	9	8	9	16	15
Males.....	24	6	2	2	2	36	4	2	3	3	7	3	3	...	6	6	6	8	6
Females.....	16	6	4	...	1	27	6	2	2	4	2	3	3	5	3	2	3	8	9

Owen.....	16	5	2	.....	1	24	3	3	4	4	5	9	1	10	10	3	8	10	18
Total.....	7	4	2	.....	.....	13	2	2	3	3	2	3	3	4	5	3	5	3	9
Males.....	9	1	2	.....	1	11	1	1	2	2	3	6	.....	6	5	2	3	7	9
Females.....				.....	.....								.....
Parke.....	52	8	3	4	1	68	8	5	9	8	8	6	9	5	7	8	13	16	21
Total.....	20	3	3	3	.....	29	4	3	6	1	5	2	3	1	5	3	9	10	9
Males.....	32	5	.....	1	.....	39	4	2	3	7	3	4	6	4	2	5	4	6	12
Females.....																			
Perry.....	38	11	7	7	4	67	12	6	10	7	5	12	4	9	7	13	6	9	10
Total.....	19	5	3	3	1	31	6	2	5	4	3	8	2	5	2	6	2	4	5
Males.....	19	6	4	4	3	36	6	4	5	3	2	4	2	4	5	6	3	5	5
Females.....																			
Pike.....	54	15	8	2	1	80	9	5	8	9	9	6	4	13	7	8	12	13	22
Total.....	28	4	3	1	1	37	4	5	4	4	5	1	2	4	5	3	5	9	11
Males.....	26	11	5	1	.....	43	5	.....	.....	.....	.....	.....	.....	9	2	6	7	4	11
Females.....																			
Porter.....	28	4	3	.....	2	37	3	3	8	8	7	9	8	9	6	11	10	16	14
Total.....	18	1	.....	.....	1	20	3	2	6	6	4	7	7	6	4	6	8	11	7
Males.....	10	3	3	.....	.....	17	.....	1	2	3	3	2	1	3	2	6	2	5	7
Females.....																			
Posey.....	46	18	6	3	3	76	5	3	9	13	6	10	16	19	6	14	14	22	16
Total.....	27	12	2	1	1	43	3	1	4	7	4	5	8	12	3	9	7	14	9
Males.....	19	6	4	2	2	33	2	2	5	6	2	5	8	7	3	5	7	8	7
Females.....																			
Pulaski.....	29	5	1	2	1	38	4	3	5	9	2	4	7	1	8	4	6	10	9
Total.....	19	4	1	1	1	26	2	2	3	5	2	1	2	1	5	1	3	4	5
Males.....	10	1	1	1	.....	12	2	1	2	4	.....	.....	.....	.....	3	3	3	6	4
Females.....																			
Putnam.....	22	4	2	1	3	32	8	3	7	10	9	6	7	6	6	17	11	11	27
Total.....	14	3	2	.....	2	21	5	3	2	7	7	4	4	5	2	9	7	7	9
Males.....	8	1	.....	1	1	11	3	.....	5	5	3	2	3	1	4	8	4	4	8
Females.....																			
Randolph.....	47	6	1	2	1	57	4	5	8	8	14	10	9	8	6	18	21	20	30
Total.....	27	3	1	.....	1	32	3	3	6	5	6	6	6	3	4	7	7	12	16
Males.....	20	3	.....	2	.....	25	1	2	4	3	8	4	4	5	2	11	14	8	14
Females.....																			
Ripley.....	31	9	5	3	.....	48	10	.....	8	13	10	14	9	11	5	12	11	15	26
Total.....	13	6	3	1	.....	23	7	.....	6	6	6	5	4	4	5	6	7	5	12
Males.....	18	3	2	2	.....	25	3	.....	2	7	7	9	5	7	.....	6	4	10	14
Females.....																			
Rush.....	36	7	3	4	1	48	7	4	5	9	8	4	7	10	6	4	17	10	17
Total.....	22	3	3	.....	3	28	2	3	4	1	4	4	4	4	6	2	6	3	6
Males.....	14	4	.....	1	1	20	5	1	5	3	4	3	3	6	.....	2	11	7	11
Females.....																			
Scott.....	19	3	1	3	.....	26	1	2	2	1	5	3	6	6	2	5	9	6	14
Total.....	7	1	1	.....	3	12	.....	2	2	.....	.....	.....	.....	.....	1	5	3	5	5
Males.....																			
Females.....																			

TABLE No. 3—Continued.

COUNTIES.	Sex.	Under 1	1	2	3	4	Under 5	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69
Shelby.....	Total.....	42	7	4	1	2	56	7	6	12	15	12	15	13	13	18	19	23	18	41
	Males.....	30	2	4	1	2	40	4	2	5	8	6	7	7	5	12	12	12	5	20
	Females.....	12	4	.....	.....	.....	16	3	4	7	7	6	8	6	8	6	7	11	13	21
Spencer.....	Total.....	51	10	3	3	3	70	9	2	11	17	9	6	6	10	11	11	15	12	14
	Males.....	28	6	2	3	3	42	8	2	4	6	5	5	5	6	5	4	7	7	6
	Females.....	23	4	1	.....	.....	28	1	.....	7	12	3	1	1	4	6	7	8	5	8
Stark.....	Total.....	28	4	.....	1	.....	33	2	1	2	4	9	.....	3	4	6	3	10	13	5
	Males.....	26	.....	.....	.....	.....	31	1	1	2	1	2	.....	2	2	4	1	6	6	4
	Females.....	8	4	.....	.....	.....	12	1	.....	.....	3	7	.....	1	2	2	2	4	7	1
Steuben.....	Total.....	33	1	1	3	.....	38	4	2	3	5	3	6	4	4	6	11	10	16	15
	Males.....	14	.....	1	3	.....	18	3	1	2	3	.....	3	3	2	1	4	5	8	5
	Females.....	19	1	.....	.....	.....	20	1	1	1	2	3	3	2	3	2	7	5	8	10
St. Joseph.....	Total.....	237	39	21	8	11	316	31	23	31	57	46	48	42	41	35	54	62	68	75
	Males.....	148	23	12	4	6	193	12	14	18	20	27	26	23	19	21	24	40	31	40
	Females.....	80	16	9	4	5	123	19	9	13	28	19	22	19	22	14	30	22	37	35
Sullivan.....	Total.....	100	23	9	7	5	144	13	8	12	17	17	12	19	13	16	16	14	15	21
	Males.....	61	13	2	3	4	83	5	3	9	8	6	6	13	5	8	7	9	8	12
	Females.....	39	10	7	4	1	61	8	5	10	8	11	6	6	8	8	9	5	7	9
Switzerland.....	Total.....	20	2	.....	.....	.....	22	3	1	3	3	2	3	5	2	1	6	8	11	9
	Males.....	11	2	.....	.....	.....	13	2	.....	.....	3	.....	2	1	2	1	2	5	7	7
	Females.....	9	.....	.....	.....	.....	9	1	1	2	.....	2	2	4	4	.....	4	3	4	2
Tipppecanoe.....	Total.....	46	8	2	6	2	64	10	6	20	20	23	16	23	20	31	44	36	49	67
	Males.....	27	6	.....	2	2	37	5	4	13	10	10	10	13	7	18	28	21	38	51
	Females.....	19	2	2	4	.....	27	5	2	7	10	12	6	10	13	13	16	15	22	29
Tipton.....	Total.....	33	6	6	2	.....	47	5	2	3	1	4	7	10	10	8	9	19	11	15
	Males.....	18	5	2	1	.....	24	2	1	2	.....	.....	4	6	4	5	6	11	7	7
	Females.....	17	1	4	1	.....	23	3	1	1	1	4	3	4	6	6	4	8	4	8

Union.....	Total.....	7	4	11	2	1	1	3	2	2	1	4	5	7	7	6	2	2
	Males.....	5	3	6	2	1	2	2	2	3	4	2	
	Females.....	2	5	3	1	
Vanderburgh.....	Total.....	216	57	23	12	7	315	20	19	35	73	53	59	83	80	74	68	58	77	58	77	90	
	Males.....	128	28	18	6	2	172	7	12	20	40	29	35	48	44	38	38	38	44	38	44	49	
	Females.....	88	29	15	6	5	143	13	7	15	33	24	24	35	36	36	30	20	33	41	.....	
Vermillion.....	Total.....	69	8	4	3	84	6	3	6	8	12	9	11	12	9	13	8	13	8	13	16	
	Males.....	36	3	2	2	.....	43	4	1	2	5	3	2	7	6	5	8	5	9	9	.....	
	Females.....	33	5	2	1	.....	41	2	2	4	3	9	7	4	6	4	5	3	4	5	.....	
Vigo.....	Total.....	221	44	27	6	13	311	32	20	36	58	63	63	64	68	59	71	82	72	82	91	
	Males.....	117	22	16	1	5	161	16	11	14	34	19	28	39	36	34	42	53	44	39	39	
	Females.....	104	22	11	5	8	150	14	9	22	24	44	35	25	32	25	29	29	28	52	.....	
Wabash.....	Total.....	45	11	2	59	5	4	10	10	7	12	10	10	19	20	15	22	22	22	
	Males.....	26	2	2	.....	.....	30	3	2	3	4	.....	6	5	7	7	10	6	13	12	.....	
	Females.....	19	9	.....	.....	.....	29	2	2	7	6	7	6	5	3	12	10	9	9	10	.....	
Warren.....	Total.....	11	4	4	22	2	6	2	9	3	9	4	3	2	6	4	4	6	7	
	Males.....	6	3	3	13	1	2	1	4	1	4	3	2	1	4	2	1	4	6	
	Females.....	5	1	1	.....	.....	9	1	4	1	5	2	5	1	1	1	2	2	5	1	.....	
Warrick.....	Total.....	44	13	8	6	3	74	6	3	9	13	12	7	14	10	7	11	13	12	12	19	
	Males.....	28	8	6	2	2	45	1	1	4	6	5	5	2	6	1	5	9	5	12	12	
	Females.....	16	5	3	4	1	29	5	2	5	7	7	2	12	4	6	6	4	7	7	7	
Washington.....	Total.....	25	9	1	3	1	39	6	4	3	9	5	8	8	9	3	11	7	13	14	14	
	Males.....	15	5	1	1	.....	22	3	2	3	3	2	4	2	5	.....	4	5	9	9	.....	
	Females.....	10	4	.....	.....	.....	17	3	2	.....	6	3	4	6	4	3	7	2	4	5	.....	
Wayne.....	Total.....	70	11	3	5	4	93	8	5	14	14	20	20	24	26	27	39	43	44	56	.....	
	Males.....	39	8	2	1	3	53	5	4	8	10	12	13	9	14	13	27	25	28	28	.....	
	Females.....	31	3	1	4	1	40	3	1	6	4	8	7	15	12	14	12	18	16	28	.....	
Wells.....	Total.....	31	6	3	3	.....	43	4	.....	5	8	8	2	6	7	6	13	13	15	17	.....	
	Males.....	15	3	2	1	.....	21	2	.....	2	2	1	5	3	2	7	6	12	9	12	.....	
	Females.....	16	3	1	2	.....	22	2	.....	3	7	3	2	2	4	4	6	7	3	8	.....	
White.....	Total.....	40	9	2	4	2	57	3	3	7	7	4	4	9	6	4	3	12	12	18	18	
	Males.....	24	4	2	1	1	30	2	1	5	3	3	3	4	6	2	2	5	3	8	.....	
	Females.....	16	5	2	3	.....	27	1	2	2	4	1	1	5	.....	2	1	7	9	10	.....	

TABLE No. 3—Continued.

COUNTIES.	SEX.	Under 1	1	2	3	4	Under 5	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69
Whitley.....	Total.....	26	6	2	1	2	37	6	2	1	13	3	8	5	9	5	9	7	11	19
	Males.....	10	3	1	1	1	15	1	1	.....	5	1	5	1	3	1	4	3	6	11
	Females.....	16	3	1	.....	1	22	5	1	1	8	2	3	4	6	4	5	4	5	8
Total males.....		3,032	580	254	163	116	4,145	393	306	507	701	619	943	729	731	722	912	1,042	1,223	1,441
Total females.....		2,381	475	230	148	110	3,344	353	253	514	737	662	626	684	656	602	804	811	945	1,208
Grand total.....		5,413	1,055	484	311	226	7,489	746	559	1,021	1,438	1,281	1,569	1,413	1,387	1,324	1,716	1,873	2,168	2,649

TABLE No. 3—Continued.

Deaths in Indiana by Months, Counties, Ages, Sex, Color, Nationality and Conjugal Condition, for Year 1911.

COUNTIES.	Sex.	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 and Over.	Unknown.	White.	Colored.	American.	Foreign.	Not Reported.	Single.	Married.	Widowed or Di- vorced.	Not Reported.	Total.
Adams.....	Total.....	13	15	16	6	2	1		184		162	22		66	79	39		184
	Males.....	4	7	9	3	1			100		84	16		44	42	14		100
	Females.....	9	8	6	3	1	1		84		78	6		22	37	25		84
Allen.....	Total.....	95	73	65	26	5	1	1	1,083	21	866	240	8	398	461	248	7	1,114
	Males.....	57	32	39	10	2	1	1	583	4	442	142	3	213	266	101	7	587
	Females.....	38	41	26	16	3			510	17	424	98	5	185	195	147		527
Bartholomew.....	Total.....	31	36	26	14	2			332	5	314	22	1	113	136	87	1	337
	Males.....	20	20	11	8	1			171	2	157	15	1	65	68	39	1	173
	Females.....	11	16	15	6	1			161	3	157	7		48	68	48		164
Benton.....	Total.....	10	11	11	3		1		110	2	93	19		33	50	29		112
	Males.....	4	5	3	3				56	1	47	10		21	30	6		57
	Females.....	6	6	8			1		54	1	46	9		12	20	23		55
Blackford.....	Total.....	9	10	8	5	2			183	2	179	15	1	73	88	33	1	195
	Males.....	7	4	4	3	1			103	2	97	7	1	46	43	15	1	90
	Females.....	2	6	4	2	1			80		82	8		27	45	18		105
Boone.....	Total.....	35	28	20	11	3			281	1	274	4	4	90	122	68	2	282
	Males.....	18	14	6	6				163		159	3	2	57	77	29	1	164
	Females.....	17	19	6	5	3			118	1	115	1	2	33	45	39	1	118
Brown.....	Total.....	7	5	3	3	1			75		75			28	32	15		75
	Males.....	3	3	2	2				41		41			20	14	7		41
	Females.....	4	2	1	1	1			34		34			8	18	8		34
Carroll.....	Total.....	21	21	21	5				186		181	4	1	57	79	50		186
	Males.....	11	11	12	3				100		99	1		32	47	21		100
	Females.....	10	11	9	2				86		82	3	1	25	32	29		86

TABLE No. 3—Continued.

COUNTIES.	Sex.	70	75	80	85	90	95	Unknown.	White.	Colored.	American.	Foreign.	Not Reported.	Single.	Married.	Widowed or Di- vorced.	Not Reported.	Total.
		to 74	to 79	84	89	to 94	and Over.											
Cass.....	Total.....	43	40	16	18	8	2	3	509	2	434	66	11	166	231	105	9	511
	Males.....	22	21	11	11	3	1	1	281	2	281	38	4	93	147	36	7	283
Clark.....	Females.....	21	19	5	7	5	2	2	228	2	153	28	7	73	84	69	2	228
	Total.....	36	40	19	10	5	3		387	53	392	43	5	168	166	105	1	440
Clark.....	Males.....	20	19	11	6	2			200	30	200	27	3	100	93	36	1	230
	Females.....	16	21	8	4	3	3		187	23	192	16	2	68	73	69		210
Clay.....	Total.....	25	22	19	5	1			408	6	370	42	2	182	161	70	1	414
	Males.....	14	10	7	2				214	6	199	19	2	113	83	23	1	220
Clinton.....	Females.....	11	12	12	3	1			194		171	23		69	78	47		194
	Total.....	29	23	20	5	5			299		294	4	1	86	140	72	1	299
Clinton.....	Males.....	16	12	12	3	2			145		144	1		44	64	36	1	145
	Females.....	13	11	8	2	3			154		150	3	1	42	76	36		154
Crawford.....	Total.....	10	12	8	3	3	1		156		147	7	2	60	64	32		156
	Males.....	6	5	3	2	2	1		79		74	5		35	32	12		79
Crawford.....	Females.....	4	7	5	1	1			77		73	2	2	26	32	20		77
	Total.....	30	29	20	1	2	1		322	6	315	13		130	127	71		328
Davies.....	Males.....	14	15	10		1			171	3	168	6		74	72	28		174
	Females.....	16	14	10		1	1		151	3	147	7		56	55	43		154
Dearborn.....	Total.....	43	23	14	15	3	1		269	1	214	51	5	73	109	84	4	270
	Males.....	24	12	7	8	2			139		108	28	3	45	68	33	3	139
Dearborn.....	Females.....	19	11	7	7	1	1		130	1	106	23	2	28	51	51	1	131
	Total.....	31	28	31	11	3	1	1	262	1	243	18	2	65	121	76	1	263
Dearborn.....	Males.....	15	19	16	7	1			141	1	133	8	1	39	71	31	1	142
	Females.....	16	9	15	4	2	1		121		110	10	1	26	50	45		121
Detroit.....	Total.....	34	24	14	14	4	1		270		245	23	2	80	122	67	1	270
	Males.....	16	15	10	7	1			149		132	15	2	63	69	27	1	149
Detroit.....	Females.....	18	9	4	7	3	1		121		113	8		28	53	40		121

Delaware.....	Total.....	44	46	34	9	5	.....	598	13	587	24	.....	234	250	126	1	611
	Males.....	19	20	13	4	3	.....	302	7	299	10	.....	133	130	45	1	309
	Females.....	25	26	21	5	2	.....	296	6	288	14	.....	101	120	81	.....	302
Dubois.....	Total.....	11	14	14	8	2	.....	233	.....	191	41	1	108	90	34	1	233
	Males.....	6	10	8	2	2	.....	124	.....	101	23	.....	44	45	15	.....	124
	Females.....	6	4	6	6	.....	109	.....	90	108	18	1	44	45	19	.....	109
Elkhardt.....	Total.....	65	56	38	23	5	1	590	2	519	54	9	176	249	151	6	592
	Males.....	28	42	21	13	1	1	308	1	270	33	6	103	134	67	5	309
	Females.....	27	14	17	10	4	.....	272	1	249	21	3	73	115	84	1	273
Fayette.....	Total.....	23	25	8	10	1	.....	204	4	194	13	1	74	91	43	.....	208
	Males.....	11	16	5	6	1	.....	99	2	91	9	1	31	54	16	.....	101
	Females.....	12	9	3	4	.....	105	2	103	4	4	.....	43	37	27	.....	107
Floyd.....	Total.....	37	35	31	13	6	4	398	47	374	68	3	164	158	121	2	445
	Males.....	20	21	17	6	3	1	213	23	197	36	3	90	99	45	2	236
	Females.....	17	14	14	7	.....	185	24	177	32	.....	.....	74	59	76	.....	209
Fountain.....	Total.....	17	22	17	11	4	.....	247	2	241	5	3	89	105	43	2	249
	Males.....	8	10	12	5	1	.....	127	2	126	2	1	57	53	19	.....	139
	Females.....	9	12	5	6	3	.....	120	.....	115	3	2	32	52	34	2	120
Franklin.....	Total.....	20	18	19	8	7	1	197	.....	155	42	.....	69	77	61	.....	197
	Males.....	9	12	11	2	2	.....	94	.....	78	16	.....	35	39	20	.....	94
	Females.....	11	6	8	6	5	1	103	.....	77	26	.....	34	38	31	.....	103
Fulton.....	Total.....	22	14	17	2	2	.....	203	.....	198	4	1	59	89	55	.....	203
	Males.....	7	6	6	2	.....	87	.....	84	3	.....	.....	30	40	17	.....	87
	Females.....	15	8	11	2	2	.....	116	.....	114	1	1	29	49	38	.....	116
Gibson.....	Total.....	22	28	18	13	4	1	367	32	376	20	3	167	143	84	5	399
	Males.....	10	16	8	5	2	.....	180	18	181	14	3	90	66	41	1	198
	Females.....	12	12	10	8	2	1	187	14	195	6	.....	77	77	43	4	201
Grant.....	Total.....	97	76	40	33	4	2	742	31	719	46	8	248	300	222	3	773
	Males.....	74	55	29	18	1	2	475	24	457	36	6	156	188	153	2	499
	Females.....	23	21	11	15	3	.....	267	7	262	10	2	92	112	69	1	274
Greene.....	Total.....	31	24	15	7	3	.....	434	3	410	23	4	205	158	71	3	437
	Males.....	18	14	9	4	2	.....	239	2	230	17	4	126	78	35	2	241
	Females.....	13	10	6	3	1	.....	195	1	180	6	.....	79	80	36	1	196
Hamilton.....	Total.....	30	30	24	21	5	1	328	11	330	9	.....	107	155	76	1	339
	Males.....	16	18	11	8	1	1	172	5	174	3	.....	56	95	25	.....	177
	Females.....	14	12	13	13	4	.....	156	6	156	6	.....	51	60	51	.....	162

TABLE No. 3—Continued.

COUNTIES.	Sex.	70	75	80	85	90	95	Unknown.	White.	Colored.	American.	Foreign.	Not Reported.	Single.	Married.	Widowed or Divorced.	Not Reported.	Total.
		to 74	to 79	to 84	to 89	to 94	and Over.											
Hancock.....	Total.....	24	16	16	5	1	1	.....	249	1	240	9	1	93	111	45	1	250
	Males.....	15	6	11	2	.....	1	.....	136	.....	127	8	1	56	57	22	1	136
	Females.....	9	10	5	3	1	.....	.....	113	1	113	1	.....	37	54	23	.....	114
Harrison.....	Total.....	14	13	21	6	3	3	.....	205	1	184	20	2	71	91	42	2	206
	Males.....	5	6	16	4	2	.....	.....	109	.....	83	14	2	41	49	17	2	109
	Females.....	9	7	5	2	1	.....	.....	96	1	91	6	.....	30	42	25	.....	97
Hendricks.....	Total.....	19	26	17	10	7	1	.....	219	11	223	5	2	61	103	64	2	230
	Males.....	10	13	7	7	5	.....	.....	115	6	115	4	2	44	50	25	2	121
	Females.....	9	13	10	3	2	1	.....	104	5	108	1	.....	17	53	39	.....	109
Henry.....	Total.....	42	36	24	11	4	1	.....	399	6	390	14	1	143	162	96	4	405
	Males.....	22	16	16	4	.....	.....	.....	214	4	209	8	1	81	98	35	4	218
	Females.....	20	20	8	7	4	1	.....	185	2	181	6	.....	62	64	61	.....	187
Howard.....	Total.....	33	28	29	19	1	1	.....	378	7	370	14	1	146	154	82	3	385
	Males.....	14	14	19	12	.....	.....	.....	202	3	195	9	1	87	77	39	2	205
	Females.....	19	14	10	7	1	.....	.....	176	4	175	5	.....	59	77	43	1	180
Huntington.....	Total.....	41	27	22	8	2	.....	.....	318	.....	298	19	.....	90	161	67	.....	318
	Males.....	17	17	12	5	.....	.....	.....	150	.....	138	12	.....	43	88	19	.....	150
	Females.....	24	10	10	3	2	.....	.....	168	.....	161	7	.....	47	73	48	.....	168
Jackson.....	Total.....	30	22	17	10	2	.....	.....	305	2	282	19	6	116	123	60	2	307
	Males.....	20	8	11	6	1	.....	1	147	.....	132	11	4	57	66	22	2	147
	Females.....	10	14	6	4	1	.....	.....	158	2	150	8	2	59	57	38	.....	160
Jasper.....	Total.....	6	10	13	4	3	.....	.....	138	.....	118	20	.....	45	62	31	.....	138
	Males.....	2	6	9	2	2	.....	.....	72	.....	59	13	.....	25	33	14	.....	72
	Females.....	4	4	4	2	1	.....	.....	66	.....	59	7	.....	20	29	17	.....	66
Jay.....	Total.....	22	41	20	10	3	.....	.....	311	.....	283	16	2	100	129	82	.....	311
	Males.....	6	29	10	8	1	.....	.....	161	.....	145	14	2	53	77	31	.....	161
	Females.....	16	12	10	2	2	.....	.....	150	.....	148	2	.....	47	52	51	.....	150

Jefferson.....	Total.....	30	25	26	17	5	1	335	14	308	30	11	100	152	92	5	349
	Males.....	18	14	11	9	1	1	177	9	167	13	6	66	91	55	4	186
	Females.....	12	11	15	8	4	.....	158	5	141	17	5	44	61	37	1	163
Jennings.....	Total.....	19	11	15	6	2	.....	178	5	168	15	.....	63	78	42	.....	183
	Males.....	11	6	9	4	1	.....	96	3	90	9	.....	33	52	14	.....	99
	Females.....	8	5	6	2	1	.....	82	2	78	6	.....	30	26	28	.....	84
Johnson.....	Total.....	27	23	9	6	2	.....	237	6	238	4	1	87	104	51	1	243
	Males.....	14	13	6	2	2	.....	119	5	121	2	1	43	55	25	1	124
	Females.....	13	8	3	4	.....	118	1	117	2	.....	44	49	26	.....	119	
Knox.....	Total.....	27	36	22	12	3	2	527	13	479	52	9	244	180	110	6	540
	Males.....	11	20	16	4	2	1	304	9	276	29	8	157	103	48	5	313
	Females.....	16	16	6	8	1	1	223	4	203	23	1	87	77	62	1	227
Kosciusko.....	Total.....	48	43	25	14	2	1	367	.....	348	19	.....	111	149	107	.....	367
	Males.....	22	23	16	8	2	.....	198	.....	187	11	.....	62	94	42	.....	198
	Females.....	26	20	9	6	.....	1	169	.....	161	8	.....	49	55	65	.....	169
Lagrange.....	Total.....	21	20	13	7	1	.....	194	.....	183	10	1	71	79	42	2	194
	Males.....	13	11	8	.....	1	.....	100	.....	96	4	.....	42	41	15	2	100
	Females.....	8	9	5	7	.....	.....	94	.....	87	6	1	29	38	27	.....	94
Lake.....	Total.....	34	24	25	14	7	7	1,153	17	830	308*	36	699	333	113	27	1,172
	Males.....	20	11	12	5	3	6	663	5	463	203*	34	420	204	50	26	700
	Females.....	10	13	13	9	4	1	460	12	367	103	2	279	129	63	1	472
Laporte.....	Total.....	53	31	44	24	3	1	622	11	452	177	4	257	225	144	7	633
	Males.....	22	18	17	13	2	1	333	11	254	87	3	158	119	60	7	344
	Females.....	31	13	27	11	1	.....	289	.....	198	90	1	99	106	84	.....	289
Lawrence.....	Total.....	33	26	13	12	2	1	444	3	427	19	1	204	179	64	.....	447
	Males.....	17	11	10	5	2	1	231	2	217	15	1	116	92	25	.....	233
	Females.....	16	15	3	7	.....	.....	213	1	210	4	.....	88	87	39	.....	214
Madison.....	Total.....	59	45	36	18	13	1	780	8	725	57	6	292	303	186	7	788
	Males.....	34	19	25	5	6	1	416	6	385	32	5	157	191	68	6	422
	Females.....	25	26	11	13	7	1	364	2	340	25	1	135	112	118	1	366
Marion.....	Total.....	285	262	142	60	19	9	3,385	509	3,339	523†	31	1,378	1,540	951	26	3,895
	Males.....	146	111	68	22	7	2	1,817	276	1,777	296†	10	835	877	357	22	2,084
	Females.....	139	141	74	38	12	7	1,568	233	1,562	229	21	540	663	594	4	1,801
Marshall.....	Total.....	27	31	21	6	4	.....	263	.....	254	27	2	81	124	77	1	263
	Males.....	14	17	10	4	2	.....	147	.....	131	14	.....	48	64	34	.....	147
	Females.....	13	14	11	2	2	.....	116	.....	123	13	.....	33	60	43	.....	136

*One Chinese; †One Chinese.

TABLE No. 3—Continued.

COUNTIES.	Sex.		70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 and Over.	Unknown.	White.	Colored.	American.	Foreign.	Not Reported.	Single.	Married.	Widowed or Di- vorced.	Not Reported.	Total.
Marlin.....	Total.....		8	13	11	2				143		139	4		65	48	30		143
	Males.....		5	8	3	2				78		75	3		38	28	12		78
Miami.....	Females.....		3	5	8					65		64	1		27	20	18		65
	Total.....		27	37	16	21	4	1		361	10	334	32†	6	114	169	87	2	372
Miami.....	Males.....		13	19	9	6	2	1		193	6	181	14†	5	73	90	35	2	200
	Females.....		14	18	7	15	2			168	4	153	18	1	41	79	52		172
Monroe.....	Total.....		21	19	13	11	3			271	17	283	4	1	112	120	55	1	288
	Males.....		11	13	5	5				137	10	142	4	1	63	64	19	1	147
Monroe.....	Females.....		10	6	8	6	3			134	7	141			49	56	36		141
Montgomery.....	Total.....		51	28	25	15	2	3		349	4	344	7	2	104	140	109		353
	Males.....		29	13	8	3	1	3		185	1	181	3	2	65	83	38		186
Montgomery.....	Females.....		22	15	17	12	1			164	3	163	4		39	57	71		167
Morgan.....	Total.....		24	30	11	10	2			273	1	267	7		107	111	58		274
	Males.....		16	16	5	3	1			147	1	142	6		61	63	24		148
Morgan.....	Females.....		8	14	6	7	1			126		125	1		46	48	32		126
Newton.....	Total.....		8	8	4		2	1		89	1	83	5	2	32	41	16	1	90
	Males.....		5	8	2		1			48	1	44	3	2	19	21	8	1	49
Newton.....	Females.....		3		2		1	1		41		39	2		13	20	8		41
Noble.....	Total.....		33	40	19	15	4			209		238	27	4	56	116	96	1	269
	Males.....		20	16	9	6	3			136		119	13	4	33	68	34	1	136
Noble.....	Females.....		13	24	10	9	1			133		119	14		23	48	62		133
Ohio.....	Total.....		5	9	4	7	2			52		49	3		13	16	23		52
	Males.....		2	4	2	4				22		22	2		6	8	10		24
Ohio.....	Females.....		3	5	2	3	2			28		27	1		7	8	13		28
Orange.....	Total.....		11	17	11	3	5	1		218	2	215	3	2	95	81	44		220
	Males.....		9	11	5	2	1			120	1	117	3	1	54	54	13		121
Orange.....	Females.....		2	6	6	1	4	1		98	1	98			41	27	31		99

†One Indian.

Owen.....	Total.....	17	15	10	8	3	1	165	1	163	3	43	72	51	166
	Males.....	8	7	3	3	3	1	76	1	75	1	21	40	15	76
	Females.....	9	8	7	5	5	1	89	1	88	2	22	32	36	90
Parks.....	Total.....	19	18	19	5	5	1	254	3	246	10	106	100	61	257
	Males.....	8	7	12	2	3	3	121	1	116	5	53	49	20	122
	Females.....	11	11	7	3	2	2	133	2	130	5	53	51	31	135
Perry.....	Total.....	14	17	21	8	8	1	232	4	195	40	117	70	48	236
	Males.....	5	9	11	4	4	1	114	1	95	20	60	35	19	115
	Females.....	9	8	10	4	4	1	118	3	100	20	57	35	29	121
Pike.....	Total.....	19	15	6	4	4	1	248	2	242	7	114	92	43	250
	Males.....	9	11	2	1	1	1	122	1	120	2	58	53	11	123
	Females.....	10	4	4	3	3	1	126	1	122	5	56	39	32	127
Porter.....	Total.....	24	16	13	19	3	4	231	24	160	62	72	84	68	231
	Males.....	17	7	5	9	3	1	141	13	93	39	48	56	30	141
	Females.....	7	9	8	10	1	3	90	11	67	23	24	28	38	90
Posey.....	Total.....	16	16	12	12	3	1	264	24	260	23	115	101	71	288
	Males.....	9	9	4	7	2	1	148	13	147	9	70	61	29	161
	Females.....	6	7	8	5	1	1	116	11	113	14	45	40	42	127
Pulaski.....	Total.....	12	13	8	1	4	1	148	148	125	23	65	57	26	148
	Males.....	7	7	5	1	1	1	82	82	73	9	31	40	11	82
	Females.....	5	6	3	1	3	1	66	1	52	14	25	26	15	66
Putnam.....	Total.....	34	26	13	14	3	1	248	3	244	5	76	104	71	251
	Males.....	18	15	7	7	1	1	147	3	148	1	50	74	26	150
	Females.....	16	11	6	7	2	1	101	1	96	4	26	30	45	101
Randolph.....	Total.....	33	30	25	16	5	2	327	2	320	5	96	144	89	329
	Males.....	13	14	12	10	1	1	163	158	158	3	58	76	29	163
	Females.....	20	16	13	6	4	2	164	2	162	2	38	68	60	166
Ripley.....	Total.....	25	36	21	11	2	1	287	287	234	51	99	126	62	287
	Males.....	12	24	11	8	1	1	149	118	149	29	66	23	149	149
	Females.....	13	12	10	3	1	1	138	116	116	22	39	60	39	138
Rush.....	Total.....	21	19	18	14	5	1	230	3	229	3	81	87	65	233
	Males.....	15	10	7	6	3	1	113	2	113	2	44	49	23	116
	Females.....	6	9	11	8	2	1	116	1	116	1	37	38	42	117
Scott.....	Total.....	12	8	7	5	3	1	120	120	120	1	41	53	26	120
	Males.....	5	5	5	2	3	1	57	57	57	1	18	32	7	57
	Females.....	7	3	2	3	2	1	63	63	63	1	23	21	19	63

TABLE No. 3—Continued.

COUNTIES.	Sex.	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 and over.	Unknown.	White.	Colored.	American.	Foreign.	Not Reported.	Single.	Married.	Widowed or Di- vorced.	Not Reported.	Total.
Shelby.....	Total.....	31	22	23	6	3	.....	.....	344	9	343	10	.....	115	158	80	.....	353
	Males.....	22	11	11	2	1	.....	.....	184	9	188	5	.....	75	90	28	.....	193
	Females.....	9	11	12	4	2	.....	.....	160	.....	155	5	.....	40	68	52	.....	160
Spencer.....	Total.....	23	16	11	12	1	1	.....	240	27	251	16	.....	116	95	56	.....	267
	Males.....	12	10	4	6	1	.....	.....	129	16	136	9	.....	72	55	18	.....	145
	Females.....	11	6	7	6	.....	1	.....	111	11	115	7	.....	44	40	38	.....	122
Starke.....	Total.....	12	7	4	3	.....	1	.....	122	.....	93	28	1	46	50	25	1	122
	Males.....	8	3	2	.....	.....	1	.....	67	.....	52	14	1	29	29	8	1	67
	Females.....	4	4	2	3	.....	.....	.....	55	.....	41	14	.....	17	21	17	.....	55
Steuben.....	Total.....	18	19	11	6	3	.....	.....	184	.....	177	7	1	59	74	51	.....	184
	Males.....	13	14	4	3	.....	.....	.....	93	.....	87	5	1	34	43	16	.....	93
	Females.....	5	5	7	3	3	.....	.....	91	.....	89	2	.....	25	31	35	.....	91
St. Joseph.....	Total.....	65	59	46	20	11	2	1	1,124	9	861	261	11	530	386	205	12	1,133
	Males.....	26	30	28	12	8	1	1	615	6	451	159	11	332	201	76	12	621
	Females.....	39	29	20	8	3	1	.....	509	3	410	102	.....	198	185	129	.....	512
Sullivan.....	Total.....	23	24	14	11	2	.....	.....	409	2	390	20	1	205	146	59	1	411
	Males.....	16	11	7	4	.....	.....	.....	213	1	203	11	.....	113	78	22	1	214
	Females.....	7	13	7	7	2	.....	.....	196	1	187	9	1	92	68	37	.....	197
Switzerland.....	Total.....	8	10	14	4	2	1	.....	122	.....	117	5	.....	37	54	31	.....	122
	Males.....	5	4	5	3	.....	1	.....	60	.....	57	3	.....	18	30	12	.....	60
	Females.....	3	6	9	1	2	.....	.....	62	.....	60	2	.....	19	24	19	.....	62
Tipton.....	Total.....	60	52	52	12	6	.....	1	900	11	514	85	12	175	260	173	4	611
	Males.....	29	28	25	3	1	.....	.....	321	6	277	43	7	108	154	61	4	327
	Females.....	31	24	27	9	5	.....	1	279	5	237	42	5	67	106	111	.....	284
Tipton.....	Total.....	10	19	8	5	2	.....	.....	195	.....	191	3	1	68	79	48	.....	195
	Males.....	5	8	3	.....	.....	.....	.....	80	.....	80	1	.....	35	38	17	.....	90
	Females.....	5	11	5	5	1	.....	.....	105	.....	102	2	1	33	41	31	.....	106

Union.....	6	11	8	2	2	1	1	1	1	80	73	6	1	21	38	18	3	8
Males.....	3	7	2	1	1	1	1	1	1	43	40	2	1	14	20	6	3	43
Females.....	3	4	6	1	1	1	1	1	1	37	33	4	1	7	18	12	3	37
Vanderburgh.....	72	67	43	30	7	3	1	1	1	1,152	1,103	109	25	549	467	297	14	1,327
Males.....	34	37	19	10	2	1	1	1	1	638	80	589	19	110	330	112	13	718
Females.....	38	30	24	20	5	2	1	1	1	514	95	89	6	219	204	185	1	609
Vermillion.....	25	15	12	6	4	1	1	1	1	272	249	21	4	119	100	54	1	274
Males.....	13	8	8	2	2	1	1	1	1	142	127	7	3	64	51	28	1	144
Females.....	12	7	4	4	2	1	1	1	1	130	122	14	1	55	49	26	1	130
Vigo.....	70	72	40	34	15	4	1	1	1	1,283	1,163	146	17	513	517	281	15	1,326
Males.....	38	41	23	12	6	3	1	1	1	665	31	589	93	292	283	109	12	696
Females.....	32	31	17	22	9	1	1	1	1	598	32	574	53	221	234	172	3	630
Wabash.....	29	25	22	10	8	1	1	1	1	320	304	16	1	96	135	88	1	320
Males.....	13	11	10	7	4	1	1	1	1	154	144	10	1	51	75	27	1	164
Females.....	16	14	12	3	4	1	1	1	1	166	160	6	1	45	60	61	1	166
Warren.....	15	9	15	3	1	2	1	1	1	131	126	4	1	45	55	30	1	131
Males.....	9	7	11	2	1	1	1	1	1	76	71	4	1	27	32	16	1	76
Females.....	6	2	4	1	1	2	1	1	1	55	55	1	1	18	23	14	1	55
Warrick.....	27	23	17	7	1	1	1	1	1	275	257	27	1	117	105	63	1	285
Males.....	11	10	7	2	1	1	1	1	1	133	123	13	1	66	56	15	1	137
Females.....	16	13	10	5	1	1	1	1	1	143	134	14	1	51	49	48	1	148
Washington.....	25	23	12	11	4	1	1	1	1	214	209	5	1	68	87	59	1	214
Males.....	14	17	5	4	1	1	1	1	1	110	107	3	1	39	46	25	1	110
Females.....	11	6	7	7	3	1	1	1	1	104	102	2	1	29	41	34	1	104
Wayne.....	59	59	46	31	10	2	1	1	1	601	565	67	8	211	247	180	2	640
Males.....	29	30	19	10	4	1	1	1	1	308	294	31	6	128	148	53	2	331
Females.....	30	29	27	21	6	2	1	1	1	293	271	36	2	83	99	127	1	309
Wells.....	21	16	11	10	3	1	1	1	1	209	205	4	1	66	87	56	1	209
Males.....	11	9	4	3	2	1	1	1	1	103	102	3	1	33	48	22	1	103
Females.....	10	7	7	7	1	1	1	1	1	106	103	3	1	33	39	34	1	106
White.....	22	18	11	7	5	1	1	1	1	212	197	14	1	83	78	50	1	212
Males.....	9	10	6	3	2	1	1	1	1	106	98	7	1	46	44	24	1	106
Females.....	13	8	5	4	3	1	1	1	1	106	99	7	1	37	34	26	1	106

TABLE No. 3—Continued.

COUNTIES.	Sex.	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 and over.	Unknown.	White.	Colored.	American.	Foreign.	Not Reported.	Single.	Married.	Widowed or Di- vorced.	Not Reported.	Total.
Whitley.....	Total.....	24	16	17	8	1	1	.....	202	.....	190	10	2	66	90	46	.....	202
	Males.....	14	6	9	4	1	1	.....	92	.....	87	4	1	30	47	15	.....	92
	Females.....	10	10	8	4	.....	.....	.....	110	.....	103	6	1	36	43	31	.....	110
Total males.....	.....	1,523	1,404	989	472	142	29	22	18,037	694	16,427	2,064½	244	7,609	7,807	3,126	193	18,735
Total females.....	.....	1,360	1,222	910	559	193	47	6	15,908	588	14,882	1,533	81	5,439	6,134	4,896	27	16,496
Grand total.....	.....	2,883	2,626	1,899	1,031	335	76	28	33,945	1,282	31,309	3,597½	325	13,048	13,941	8,022	220	35,231

‡Two Chinese and two Indians.

TABLE No. 4.
Deaths in Indiana by Counties for the Year 1911.

STATE AND COUNTIES.	Population.	Total Deaths Reported for Year 1911.	Annual Death Rate Per 1,000 Population.	Important Ages.					Deaths from Important Causes.																
				Under 1 Year.	1 to 4 Inclusive.	5 to 9 Inclusive.	10 to 14 Inclusive.	15 to 19 Inclusive.	65 Years and Over.																
									Pulmonary Tuberculosis.	(Other Forms of Tuberculosis.	Typhoid Fever.	Diphtheria and Croup.	Scarlet Fever.	Measles.	Whooping Cough.	Lobar and Broncho Pneumonia.	Diarrhea and Enteritis. (Under 2 Years.)	Cerebro-Spinal Fever.	Acute Anterior Polyomyelitis.	Influenza.	Puerperal Septicemia.	Cancer.	External Causes.	Smallpox.	
State.....	2,700,876	36,231	13.0	5,413	2,079	746	559	1,012	11,527	3,525	703	736	374	179	280	320	2,612	1,629	26	98	659	293	1,919	2,737	3
Northern Counties.....	927,229	11,423	12.3	1,904	632	235	168	316	3,849	957	185	226	104	98	77	76	809	598	1	21	185	106	670	936	1
Adams.....	21,840	184	8.4	29	12	4	3	6	71	18	2	5	1	1	2	2	10	6	1	1	7	1	11	16	..
Allen.....	93,366	1,114	11.9	152	50	28	9	31	349	99	21	14	14	7	1	7	98	24	1	2	13	13	77	104	..
Benton.....	12,688	112	8.8	15	7	2	..	6	47	6	1	1	1	1	1	1	11	12	1	1	..	2	8	9	..
Blackford.....	15,820	195	12.3	37	13	3	4	4	43	16	2	2	2	2	2	2	15	12	..	1	8	4	14	..	
Carroll.....	17,970	186	10.3	24	7	3	4	9	85	16	7	5	5	2	2	2	12	2	2	1	2	2	10	10	..
Cass.....	36,368	511	14.0	51	25	8	13	10	171	54	10	5	6	11	4	2	25	15	2	1	10	2	38	41	1
Dearborn.....	25,064	270	10.7	36	12	2	5	5	112	22	5	2	1	2	3	1	10	8	1	1	8	2	21	22	..
Elkhart.....	49,008	582	11.8	66	31	10	8	26	231	38	7	9	4	9	12	6	31	15	1	1	7	9	35	48	..
Fulton.....	16,879	203	12.0	27	8	4	2	4	75	18	6	1	1	1	1	1	13	9	1	1	5	3	13	14	..
Grant.....	51,426	773	15.0	99	43	15	11	15	344	63	11	16	6	3	4	12	41	28	1	1	14	5	41	39	..
Howard.....	33,177	385	11.6	65	23	11	8	13	134	41	8	6	5	3	2	2	18	17	2	2	5	4	27	26	..
Huntington.....	28,962	318	10.9	33	9	8	10	10	126	32	6	6	3	2	2	1	15	4	1	1	3	3	19	22	..
Jasper.....	13,044	138	10.5	23	10	1	3	1	55	11	2	4	1	1	1	1	9	5	1	1	..	1	17	6	..
Jay.....	24,981	311	12.4	39	15	8	4	16	115	27	10	9	1	1	1	1	17	11	3	3	10	3	22	21	..
Kosciusko.....	27,936	367	13.1	41	19	6	6	15	174	35	3	1	3	1	7	2	28	8	3	3	7	4	24	29	..
Lagrange.....	15,148	194	12.8	36	15	3	1	6	72	16	5	1	1	1	1	3	13	6	2	4	4	3	11	8	..
Lake.....	82,664	1,172	14.1	413	116	25	17	27	135	87	7	24	20	11	9	10	119	210	2	2	10	10	30	164	..
Laporte.....	45,797	633	13.8	97	38	16	13	16	197	60	7	7	7	13	1	8	68	45	2	8	3	5	3	40	..
Marshall.....	24,175	283	11.7	40	12	3	2	7	119	22	2	7	3	2	5	4	15	11	1	1	10	1	14	18	..

TABLE No. 4—Continued.

STATE AND COUNTRIES.	Popu- lation.	Total Deaths Reported for Year 1911.	Annual Death Rate Per 1,000 Population.	IMPORTANT AGES.						DEATHS FROM IMPORTANT CAUSES.												
				Under 1 Year.	1 to 4 Inclusive.	5 to 9 Inclusive.	10 to 14 Inclusive.	15 to 19 Inclusive.	65 Years and Over.													
Miami.....	29,350	372	12.6	45	15	6	4	13	136													
Newton.....	10,504	90	8.5	18	3	3	1	4	30													
Noble.....	24,009	269	11.2	21	8	4	4	4	140													
Porter.....	20,540	231	11.2	28	9	3	3	8	95													
Pulaski.....	13,312	148	11.1	29	9	4	3	5	47													
Stark.....	10,567	122	11.5	28	5	2	1	2	32													
Steuben.....	14,274	184	12.8	33	5	4	2	3	72													
St. Joseph.....	84,312	1,133	13.4	237	79	31	23	31	279													
Walsh.....	26,926	320	11.8	45	14	5	4	10	117													
Wells.....	22,418	209	9.3	31	12	4	4	5	79													
White.....	17,602	212	12.0	40	17	3	3	7	81													
Whitely.....	16,849	202	11.9	26	11	6	2	1	86													
Central Counties.....	1,114,087	14,846	13.3	2,025	789	293	238	484	4,943													
Bartholomew.....	24,813	337	13.5	34	20	5	7	12	133													
Boone.....	24,673	282	11.4	38	11	5	5	9	120													
Brown.....	7,975	75	9.4	12	8	1	1	1	22													
Clay.....	32,535	414	12.7	72	32	12	9	17	100													
Clinton.....	26,674	299	11.2	35	20	5	12	11	111													
Deatur.....	18,793	263	14.0	29	5	3	2	7	127													
Daviess.....	51,414	908	11.8	105	39	9	8	22	180													
Fayette.....	14,415	208	14.4	45	19	7	2	3	83													
Fountain.....	20,439	249	12.3	45	13	7	7	6	91													
Franklin.....	15,335	197	12.8	26	11	3	4	4	96													

Hamilton.....	27,028	339	12.5	51	11	8	5	12	142	41	3	6	1	1	5	26	10	1	9	2	23	20
Hancock.....	19,030	230	13.1	33	13	8	3	9	83	23	8	6	1	2	4	18	10	1	6	2	11	18
Hendricks.....	20,840	230	11.0	20	9	3	3	3	100	24	8	5	4	5	4	18	3	3	1	5	2	12
Henry.....	29,783	406	13.6	64	20	11	6	13	147	38	6	7	4	4	5	28	17	1	5	2	22	36
Johnson.....	20,394	243	11.9	36	10	7	7	3	84	30	8	4	3	4	5	24	8	1	1	6	1	15
Madison.....	65,224	788	12.0	122	46	25	16	29	233	89	23	14	15	8	12	8	28	1	13	9	35	
Marion.....	263,661	3,685	14.7	470	185	60	68	118	1,049	389	102	66	44	9	4	25	233	3	4	28	219	
Monroe.....	23,426	238	12.2	31	19	6	4	7	88	40	2	3	1	1	1	31	22	1	6	7	9	
Montgomery.....	29,296	533	12.0	38	17	6	4	12	181	26	6	6	2	1	1	31	10	3	12	2	20	
Morgan.....	21,182	274	12.9	52	12	7	4	12	90	26	11	6	3	1	1	25	17	1	9	2	9	
Owen.....	14,033	166	11.8	16	8	3	3	4	72	18	3	3	2	2	2	20	6	1	4	2	16	
Park.....	22,214	237	11.8	32	10	8	5	9	87	22	8	9	4	1	1	3	21	10	1	2	13	
Pottawamie.....	20,320	251	12.2	22	10	8	3	7	118	27	8	6	4	1	2	20	5	1	7	1	23	
Rutland.....	29,013	329	11.3	27	10	4	5	8	141	36	10	3	1	1	1	14	7	1	3	2	22	
Randolph.....	19,349	233	12.0	36	12	7	4	6	94	17	5	3	1	1	1	20	5	1	3	2	15	
Rush.....	26,802	353	13.1	42	14	7	6	12	126	54	4	7	2	2	5	24	7	1	2	4	16	
Shelby.....	40,963	611	13.2	46	18	10	6	20	249	61	9	6	1	1	1	36	12	2	19	1	42	
Tipton.....	17,459	186	11.1	33	14	5	2	3	89	22	5	1	1	6	1	3	10	3	2	2	9	
Union.....	6,260	80	12.7	7	4	.....	2	.....	36	5	2	1	.....	.....	.....	1	2	1	.....	.....	8
Vermillion.....	18,865	274	14.5	69	15	6	3	6	80	22	7	2	2	2	3	26	18	.....	11	2	12
Vigo.....	37,680	1,326	15.0	221	90	32	26	36	327	133	26	38	14	5	11	15	89	67	17	18	67	
Warren.....	10,829	131	12.0	11	11	2	6	2	53	9	3	5	6	1	3	10	3	.....	3	2	4
Wayne.....	43,757	640	14.6	70	23	8	5	14	263	46	19	6	6	1	1	32	18	1	11	2	37	
Wayne.....	43,757	640	14.6	70	23	8	5	14	263	46	19	6	6	1	1	32	18	1	11	2	37	
Southern Counties.....	659,560	8,992	13.5	1,484	668	218	153	271	2,735	1,046	177	237	126	31	127	738	488	13	22	212	77	
Clark.....	30,290	440	14.5	72	12	10	7	12	141	54	14	5	3	1	1	6	22	25	12	2	28	
Crawford.....	12,057	156	12.9	23	13	4	3	6	55	26	4	1	3	4	5	8	6	1	6	1	11	
Darwin.....	37,747	328	11.8	51	26	12	9	13	101	43	5	11	3	5	1	27	15	3	7	1	10	
Dearborn.....	21,398	270	12.6	25	11	3	5	4	121	25	3	7	6	1	2	28	14	.....	1	6	22
Dubuon.....	19,843	233	11.7	54	19	6	4	6	65	26	4	7	6	2	8	26	14	.....	5	3	4
Floyd.....	30,293	445	14.6	59	22	5	12	11	164	50	9	9	9	3	2	10	23	20	10	2	27	
Gibson.....	30,137	399	13.2	70	31	9	6	19	113	57	7	10	6	1	4	5	20	20	5	13	19	
Greene.....	36,873	437	11.8	96	38	14	4	12	109	46	6	13	7	1	4	2	50	42	1	11	16	
Harrison.....	20,232	304	10.1	33	10	4	2	10	73	22	3	6	4	1	5	5	9	1	5	1	10	
Jackson.....	24,727	307	12.4	60	13	10	5	8	107	32	6	8	3	1	5	27	14	1	4	2	13	
Jefferson.....	20,483	349	17.0	31	14	3	3	5	134	51	3	7	1	1	4	32	7	1	3	1	25	
Jennings.....	14,203	183	12.8	25	11	4	3	66	21	21	1	1	10	2	1	20	6	1	5	1	12	
Knox.....	39,183	540	13.7	92	50	15	16	24	138	58	9	16	10	2	11	55	27	1	2	12	22	
Lawrence.....	20,623	447	14.6	86	45	13	14	15	114	48	12	23	5	.....	2	44	26	1	1	16	9
Martin.....	12,960	143	11.0	27	13	4	2	5	44	17	3	7	2	.....	.....	7	6	.....	1	8	3

TABLE No. 5.
Death Rate by Counties for the Year 1911.

STATE AND COUNTIES.	Population.	Total Deaths Reported for Year 1911.	Annual Death Rate Per 1,000 Population.	DEATHS FROM IMPORTANT CAUSES.															Smallpox.
				Pulmonary Tuberculosis.	Other Forms of Tuberculosis.	Typhoid Fever.	Diphtheria and Croup.	Scarlet Fever.	Measles.	Whooping Cough.	Lobar and Broncho-Pneumonia.	Diarrhea and Enteritis (Under 2 Years).	Cerebro-Spinal Fever.	Acute Anterior Polyneuritis.	Influenza.	Puerperal Septicemia.	Cancer.	External Causes.	
State.....	2,700,876	35,231	13.0	130.5	26.1	26.9	13.8	6.6	10.3	11.8	96.7	60.3	.9	2.5	24.4	10.8	71.7	101.3	.1
Northern Counties.....	927,229	11,423	12.3	103.2	19.9	24.3	11.2	10.5	8.3	8.1	87.2	64.4	.1	2.2	19.9	11.4	72.2	100.9	.1
Adams.....	21,840	184	8.4	82.4	9.1	22.8	4.5	.....	9.1	.....	45.7	27.4	1.0	2.1	32.0	4.5	50.3	73.2	.....
Allen.....	93,366	1,114	11.9	106.0	22.4	14.6	14.9	7.4	1.0	7.4	104.9	25.7	1.0	2.1	13.9	13.9	82.4	111.3	.....
Benton.....	12,638	112	8.8	47.2	7.8	7.8	.....	.....	.....	7.8	86.6	15.7	.....	7.8	50.5	15.7	63.0	70.8	.....
Blackford.....	15,820	195	12.3	101.1	12.6	12.5	.....	.....	.....	.....	94.8	75.8	.....	5.5	11.1	25.2	50.5	88.5	.....
Carroll.....	17,970	186	10.3	89.0	38.9	27.8	.....	11.1	.....	.....	66.7	11.1	.....	5.5	11.1	11.1	55.6	55.6	.....
Cass.....	36,368	511	14.0	148.5	27.5	13.6	16.5	30.2	11.0	5.4	68.7	41.2	2.7	2.7	27.5	5.4	104.5	110.2	2.7
DeKalb.....	25,054	270	10.7	87.8	19.9	7.9	3.9	7.9	11.9	3.9	39.9	31.9	3.9	3.9	31.9	7.9	83.8	87.8	.....
Elkhart.....	49,008	582	11.8	77.5	14.2	18.1	8.1	18.3	24.4	12.2	63.2	30.6	.....	5.9	29.6	17.7	77.0	82.9	.....
Fulton.....	16,879	203	12.0	106.6	35.5	.....	.....	5.9	5.9	5.9	77.0	53.3	.....	1.9	27.2	9.7	79.7	75.8	.....
Grant.....	51,426	773	15.0	122.5	21.3	30.9	11.6	5.8	7.7	23.3	79.7	54.4	.....	1.9	27.2	9.7	79.7	75.8	.....
Howard.....	33,177	385	11.6	123.6	24.1	17.7	15.0	9.0	.....	6.0	54.2	51.2	6.0	3.4	15.4	12.0	81.3	78.3	.....
Huntington.....	28,982	318	10.9	100.4	20.7	20.6	10.3	6.9	.....	3.4	15.7	13.8	.....	3.4	10.3	10.3	65.5	75.9	.....
Jasper.....	13,044	138	10.5	84.3	15.3	30.6	.....	.....	.....	7.6	69.0	38.3	.....	7.6	40.0	130.3	46.0	.....
Jay.....	24,961	311	12.4	108.2	40.0	36.0	4.0	.....	4.0	12.0	68.1	44.0	.....	.....	40.0	12.0	98.1	84.1	.....
Kosciusko.....	27,836	367	13.1	125.1	10.7	3.5	10.7	3.5	25.0	7.1	100.1	28.6	.....	10.7	25.0	14.3	85.8	103.7	.....
Lafayette.....	15,148	194	12.8	105.6	33.0	6.6	.....	6.6	19.8	.....	85.8	39.6	.....	2.4	26.4	19.8	72.6	52.8	.....
Lake.....	82,864	1,172	14.1	105.0	8.4	27.4	24.1	13.2	10.8	12.0	143.6	253.4	.....	2.4	12.0	12.0	36.2	197.9	.....
Laporte.....	45,797	633	13.8	109.2	15.2	15.0	15.2	28.3	2.1	17.4	126.6	98.2	.....	4.3	10.9	6.5	87.3	111.3	.....
Marshall.....	24,175	283	11.7	99.0	8.2	28.9	12.4	8.2	20.6	16.5	62.0	45.5	.....	.....	41.3	4.1	57.9	74.4	.....

TABLE No. 5—Continued.

STATE AND COUNTIES.	Population.	Total Deaths Reported for Year 1911.	Annual Death Rate Per 1,000 Population.	DEATHS FROM IMPORTANT CAUSES.												Smallpox.		
				Pulmonary Tuberculosis.	Other Forms of Tuberculosis.	Typhoid Fever.	Diphtheria and Croup.	Scarlet Fever.	Measles.	Whooping Cough.	Lobar and Broncho-Pneumonia.	Diarrhea and Enteritis. (Under 2 Years.)	Cerebro-Spinal Fever.	Acute Anterior Polomyelitis.	Influenza.		Puerperal Septicemia.	Cancer.	External Causes.
Miami.....	29,350	372	12.6	112.4	23.8	104.8	3.4	6.8	3.4	9.5	71.5	54.5	27.2	27.2	10.4	57.9	122.6	122.6
Newton.....	10,504	90	8.5	93.0	23.5	12.4	9.5	9.5	4.1	9.5	47.6	47.6	19.0	19.0	10.4	47.6	76.1	76.1
Noble.....	24,009	289	11.2	62.4	20.8	29.1	4.1	8.3	4.1	9.5	41.6	16.2	37.4	37.4	10.4	91.6	108.3	108.3
Porter.....	20,540	231	11.2	68.1	4.8	29.1	9.7	14.6	4.8	9.7	77.9	58.4	37.4	37.4	10.4	102.2	126.6	126.6
Pulaski.....	13,312	148	11.1	75.1	15.0	37.5	3.4	7.5	7.5	9.5	142.8	22.5	7.5	7.5	22.5	67.6	97.6	97.6
Starke.....	10,567	122	11.5	73.6	18.9	28.3	9.4	9.4	9.4	9.5	85.1	47.3	18.9	18.9	10.4	66.2	47.3	47.3
Steuben.....	14,274	184	12.8	63.0	21.0	13.9	9.4	14.2	14.2	3.5	49.0	14.0	7.0	49.0	17.7	105.1	84.1	84.1
St. Joseph.....	84,312	1,133	13.4	122.1	26.0	39.1	24.9	14.2	14.2	3.5	91.3	102.0	7.1	7.1	17.7	64.0	102.0	102.0
Wabash.....	26,926	320	11.8	100.2	18.5	14.8	7.4	4.4	7.4	11.1	85.3	33.4	40.8	40.8	11.1	81.6	96.5	96.5
Wells.....	22,418	209	9.3	93.7	22.3	31.1	5.6	4.4	8.9	13.3	102.6	31.2	11.3	28.4	8.9	26.7	92.4	92.4
White.....	17,602	212	12.0	125.0	22.7	17.0	5.6	41.4	22.7	5.6	85.2	56.8	11.3	28.4	17.7	45.4	56.8	56.8
Whitley.....	16,894	202	11.9	82.8	23.6	23.6	5.9	41.4	5.9	5.9	154.0	5.9	11.3	28.4	17.7	100.6	71.0	71.0
Central Counties.....	1,114,087	14,846	13.3	136.6	30.7	24.5	12.9	4.4	6.8	10.8	95.5	43.7	1.0	2.2	23.5	9.8	71.8	104.1
Bartholomew.....	24,813	337	13.5	189.4	36.2	36.1	36.2	4.0	12.0	12.0	108.8	32.2	12.0	12.0	8.1	68.5	88.6	88.6
Boone.....	24,672	282	11.4	150.0	26.3	16.1	16.2	4.0	16.2	16.2	68.8	20.1	40.5	40.5	8.1	48.6	72.9	72.9
Brown.....	7,975	75	9.4	150.5	12.5	37.6	37.6	12.5	12.5	25.0	37.6	50.1	12.5	25.0	24.5	49.1	125.5	125.5
Clay.....	32,535	414	12.7	141.4	24.5	12.2	27.6	3.7	21.5	9.2	86.0	98.3	3.0	30.7	24.5	49.1	101.4	101.4
Cumtong.....	26,674	299	11.2	112.5	15.0	11.1	15.0	3.7	3.7	3.7	86.2	30.0	37.5	37.5	18.7	90.0	74.9	74.9
Decatur.....	18,793	263	14.0	149.0	37.2	37.1	21.2	7.7	5.8	5.3	95.8	5.3	42.5	42.5	5.3	69.1	63.8	63.8
DeWitt.....	611	111	11.8	114.8	31.1	30.9	27.2	7.7	5.8	27.2	93.3	42.8	1.9	1.9	17.5	60.3	91.4	91.4
Fayette.....	14,415	208	14.4	145.7	13.8	20.6	20.6	6.9	7.3	7.3	41.6	48.5	9.7	9.7	14.6	111.0	83.2	83.2
Franklin.....	20,439	249	12.1	107.6	24.4	19.5	27.2	9.7	14.6	14.6	73.3	58.7	9.7	9.7	14.6	58.7	97.7	97.7
Fountain.....	15,335	197	12.8	143.5	19.5	32.6	27.2	13.0	39.1	39.1	104.4	26.0	6.5	6.5	32.6	58.7	97.8	97.8

Hamilton.....	339	12.5	151.7	111.1	22.1	3.7	3.7	18.5	96.2	37.0	3.7	32.3	7.4	85.1	74.0
Hancock.....	27,026	19.030	120.9	42.0	31.5	5.2	.....	10.5	21.0	94.6	52.5	5.2	31.5	10.5	57.8
Hendricks.....	20,840	230	115.1	38.3	23.9	.....	.....	23.9	94.6	15.7	5.2	24.0	.....	57.5	84.0
Henry.....	29,758	405	127.7	20.1	23.0	13.4	13.4	13.4	94.1	57.1	16.8	6.7	72.9	73.9	121.0
Johnson.....	20,394	243	147.1	39.2	19.5	14.7	.....	24.5	117.7	36.2	4.9	26.5	4.9	13.5	83.3
Madison.....	65,224	788	136.5	28.0	21.3	23.0	12.2	18.4	92.0	43.0	1.5	19.9	13.8	53.6	88.9
Marion.....	263,661	3,895	147.7	38.6	24.4	16.6	3.4	1.5	107.3	54.6	1.1	15.4	9.4	53.0	117.6
Monroe.....	28,426	288	122.2	170.7	8.5	12.6	4.2	4.2	89.6	93.8	4.2	25.6	29.8	38.4	119.3
Montgomery.....	29,266	353	12.0	88.7	20.4	20.2	6.8	3.4	105.8	34.1	10.2	40.9	6.8	68.2	78.5
Morgan.....	21,152	274	122.8	51.9	28.2	14.1	.....	4.7	118.0	80.2	.....	42.4	9.4	42.4	66.1
Owen.....	14,053	166	118.8	128.1	21.3	21.3	14.2	14.2	142.3	42.7	.....	28.4	.....	113.9	58.9
Park.....	22,214	257	111.5	99.0	36.0	40.5	22.5	.....	94.5	45.0	4.5	27.0	9.0	38.5	72.0
Putnam.....	20,520	251	12.2	131.6	38.9	29.2	19.4	4.8	9.7	24.3	4.8	34.1	4.8	63.5	107.2
Randolph.....	29,013	329	11.3	124.1	34.4	10.3	3.4	3.4	48.2	24.1	.....	10.3	3.4	79.2	75.8
Rush.....	19,349	233	12.0	87.8	.....	23.7	15.5	5.1	103.3	23.8	5.1	15.5	10.3	77.5	108.5
Shelby.....	26,802	353	13.1	201.5	14.9	25.9	7.4	18.6	89.5	26.1	3.7	7.4	7.4	59.7	130.6
Tippecanoe.....	40,063	611	15.2	152.3	22.4	14.9	2.4	2.4	89.8	25.9	4.9	47.4	2.4	104.9	149.3
Tipton.....	17,459	195	11.1	126.0	28.6	5.7	5.7	5.7	45.8	57.2	.....	47.9	11.4	51.5	87.2
Union.....	6,260	80	12.7	79.8	31.9	15.9	10.6	.....	15.9	31.9	15.9	.....	.....	127.8	173.7
Vermillion.....	18,865	274	14.5	116.6	37.0	10.4	15.9	10.6	137.8	95.4	.....	58.2	10.6	63.5	137.8
Vigo.....	87,930	1,326	15.0	151.3	29.5	41.9	.....	5.6	17.0	76.2	.....	1.1	20.4	76.2	133.3
Warren.....	10,899	131	12.0	82.5	27.5	45.8	13.7	18.3	27.5	91.7	2.2	27.5	18.3	26.7	126.4
Wayne.....	43,757	640	14.6	105.1	43.4	13.5	.....	2.2	6.8	73.1	.....	25.1	4.5	94.5	112.0
Southern Counties.....	659,560	8,962	13.5	158.6	26.8	35.9	19.1	4.7	19.2	111.9	73.9	1.9	3.3	11.6	98.2
Clark.....	30,260	440	14.5	178.4	46.2	16.5	9.9	3.3	19.8	72.7	82.6	29.5	6.6	92.5	135.5
Crawford.....	12,057	156	12.9	215.6	33.2	41.4	8.2	24.8	41.4	66.3	49.7	8.2	8.2	91.2	166.3
Davies.....	27,747	328	11.8	10.8	18.0	39.6	10.8	18.0	3.6	14.4	10.8	25.2	25.2	36.0	79.2
Dearborn.....	21,396	270	12.6	116.5	14.0	9.3	9.3	4.6	130.9	54.0	4.6	29.3	9.3	102.8	98.1
Dubois.....	19,843	233	11.7	131.1	20.1	33.2	30.2	.....	131.1	70.5	.....	30.2	15.1	20.1	75.6
Floyd.....	30,293	445	14.6	161.3	29.7	29.6	29.7	9.9	50.0	75.9	66.0	33.0	6.6	89.1	112.2
Gibson.....	30,137	399	13.2	189.1	23.2	33.1	19.9	3.3	16.5	89.6	16.5	43.1	16.5	63.0	96.2
Greene.....	36,873	437	11.8	124.8	16.2	34.4	18.9	2.7	10.8	113.9	2.7	27.1	29.8	43.3	122.0
Harrison.....	20,232	206	10.1	103.8	14.8	29.6	19.7	4.9	24.7	44.4	4.8	16.1	4.8	49.4	48.3
Jackson.....	24,727	307	12.4	129.4	24.2	32.3	12.1	4.0	109.2	56.0	.....	4.8	8.0	52.5	101.1
Jefferson.....	20,483	349	17.0	249.0	14.6	34.1	4.8	.....	156.2	34.1	4.8	14.6	4.8	122.1	87.9
Jennings.....	14,203	183	12.8	147.9	7.0	.....	4.8	.....	35.2	49.2	.....	35.2	7.0	84.5	91.5
Knox.....	39,183	540	13.7	148.0	22.9	40.1	25.5	5.1	140.8	68.9	2.5	30.6	15.3	56.1	114.8
Lawrence.....	30,625	447	14.6	156.7	59.1	73.9	16.3	.....	143.7	84.9	.....	52.2	29.3	35.9	130.6
Martin.....	12,950	143	11.0	131.2	23.1	53.7	15.4	.....	54.0	40.3	7.7	61.7	23.1	77.2	77.2

TABLE No. 6.
Deaths in Indiana by Cities for Year 1911.

CITIES.	Population.	Total Deaths Reported for Year 1911.	Annual Death Rate Per 1,000 Population.	IMPORTANT AGES.					DEATHS FROM IMPORTANT CAUSES.																	
				Under 1 Year.	1 to 4 Inclusive.	5 to 9 Inclusive.	10 to 14 Inclusive.	15 to 19 Inclusive.	65 Years and Over.	Pulmonary Tuberculosis.	Other Forms of Tuberculosis.	Typhoid Fever.	Diphtheria and Croup.	Scarlet Fever.	Measles.	Whooping Cough.	Lobar and Broncho Pneumonia.	Diarrhea and Eri- varicels. (Under 2 Years).	Cerebro-Spinal Fever.	Acute Anterior Poliomyelitis.	Influenza.	Puerperal Septicemia.	Cancer.	External Causes.	Smallpox.	
Cities of First Class. Population 100,000 and over.....	233,650	3,528	15.1	444	166	58	58	100	866	361	92	62	42	8	3	17	254	137	3	2	39	16	188	259	..	..
Indianapolis.....	233,650	3,528	15.1	444	166	58	58	100	866	361	92	62	42	8	3	17	254	137	3	2	39	16	188	259	..	..
Cities of Second Class. Population 45,000 to 100,000.....	245,421	3,511	14.3	591	217	72	53	96	938	356	65	66	43	20	30	29	281	197	2	2	34	39	211	283	..	..
Evansville.....	69,647	1,065	15.5	189	75	18	16	28	248	124	15	14	10	1	24	15	99	77	2	1	12	7	68	69	..	..
Ft. Wayne.....	63,933	751	11.7	96	35	20	7	21	216	66	16	14	12	6	..	4	62	14	..	1	9	10	56	84	..	..
Terre Haute.....	58,157	916	15.7	122	56	14	14	24	221	91	19	18	7	5	..	9	72	37	..	..	11	12	46	77	..	..
South Bend.....	53,684	759	14.1	185	51	20	16	23	153	75	15	20	14	8	6	1	48	69	..	..	2	10	41	53	..	..
Cities of Third Class. Population 20,000 to 45,000.....	130,440	1,830	14.0	298	93	38	25	84	541	196	50	35	23	10	6	26	128	73	..	1	37	12	112	183	..	..
Muncie.....	24,005	312	13.0	79	20	5	5	14	116	42	9	7	..	1	..	13	26	11	..	..	3	3	33	30	..	..
Anderson.....	22,476	305	13.5	43	13	10	3	33	86	31	10	4	3	4	4	5	27	7	..	..	8	2	13	24	..	..
Richmond.....	22,324	272	12.1	36	16	3	3	6	96	28	12	1	6	1	..	3	16	7	..	..	6	..	21	23	..	..
Hammond.....	20,925	282	13.4	77	16	10	2	12	28	22	6	8	5	2	..	2	22	30	..	..	..	3	8	44	..	..
New Albany.....	20,629	318	15.4	38	18	2	7	7	101	38	7	7	8	1	2	3	18	14	..	..	6	3	18	25	..	..
Lafayette.....	20,081	341	16.9	25	9	8	5	12	114	35	6	5	1	1	..	..	19	4	..	1	12	1	19	37	..	..

Columbus.....	8,813	121	13.7	9	6	1	5	1	42	16	3	2	6	1	1	5	11	5	4	9	13	4
Bedford.....	8,716	109	12.5	19	10	2	3	3	31	10	2	4	2	1	1	1	12	7	2	27	13	13
Wabash.....	8,687	116	13.3	19	6	1	3	3	34	8	3	2	1	1	1	1	8	4	8	9	10	8
Frankfort.....	8,634	105	12.1	14	8	2	1	3	38	11	2	3	3	1	1	1	3	4	2	10	12	12
Goshen.....	8,514	115	13.5	11	12	1	5	4	51	5	2	2	1	7	1	3	3	2	1	3	5	5
Washington.....	7,854	111	14.1	13	7	1	1	3	35	16	2	1	1	1	1	3	12	7	5	4	7	7
Connersville.....	7,738	105	13.5	15	8	2	2	2	30	12	2	1	1	1	4	2	5	5	3	9	8	8
Valparaiso.....	6,987	78	11.1	4	4	2	1	3	27	5	3	3	3	3	3	2	5	5	5	10	6	6
Madison.....	6,834	122	17.5	15	5	1	1	3	39	20	2	4	1	2	1	8	8	22	3	3	9	9
Whiting.....	6,587	83	12.6	32	10	3	1	2	8	7	1	3	1	2	1	1	8	22	3	3	5	5
Princeton.....	6,448	97	15.0	16	9	1	2	5	28	22	1	5	1	1	1	5	6	6	2	7	6	6
Seymour.....	6,306	91	14.4	20	3	1	2	2	30	10	1	3	1	1	1	8	8	11	3	8	8	
Union.....	6,229	85	13.6	31	5	5	1	6	17	3	4	1	2	2	3	4	4	5	10	10	10	
Hartford City.....	6,187	102	16.4	14	7	1	1	2	25	6	1	1	1	1	3	8	5	5	2	7	7	
Linton.....	5,906	74	12.5	15	9	2	1	2	14	6	1	4	2	1	1	8	6	6	1	11	11	
Mt. Vernon.....	5,563	91	16.3	16	9	1	2	2	21	14	2	1	1	2	2	3	10	3	7	3	3	3
Lebanon.....	5,474	65	11.8	7	2	1	3	2	25	12	2	2	3	3	1	1	1	1	1	2	2	2
Greensburg.....	5,420	113	20.8	6	5	3	1	3	52	11	6	3	3	3	1	6	6	6	6	6	6	6
Portland.....	5,130	77	15.0	8	5	1	2	4	24	7	4	2	2	1	1	9	5	4	4	5	5	5
Alexandria.....	5,096	72	14.1	8	6	3	1	4	19	13	2	5	1	1	1	4	4	1	4	5	5	5
Noblesville.....	5,073	77	15.1	16	1	4	2	4	25	8	2	2	2	1	1	4	4	3	3	6	6	6
Bluffton.....	4,987	60	12.0	15	7	2	1	3	17	5	1	1	1	1	1	7	7	1	1	3	3	3
Kendallville.....	4,961	46	9.2	7	2	1	1	1	18	3	1	1	1	1	1	1	1	1	1	4	4	4
Rushville.....	4,925	69	14.0	24	4	1	1	1	25	5	5	1	2	1	1	7	7	1	1	2	2	2
Martinsville.....	4,529	89	19.6	18	8	3	1	6	18	9	6	1	1	1	1	13	7	1	4	4	4	4
Franklin.....	4,502	50	11.1	5	2	1	1	2	13	7	2	1	1	1	2	2	2	1	3	7	7	7
Decatur.....	4,471	46	10.2	9	4	1	1	2	17	9	1	1	1	1	1	2	2	3	4	6	6	6
Greenfield.....	4,448	68	15.2	11	4	2	1	2	25	7	1	1	1	1	1	5	5	3	1	3	3	3
Warsaw.....	4,430	61	13.7	4	1	1	1	1	22	15	1	1	1	1	1	3	3	1	3	6	6	6
Aurora.....	4,410	77	17.4	12	6	2	2	1	23	7	1	1	1	1	1	5	5	4	0	0	0	0
Winchester.....	4,266	51	11.9	12	3	1	2	2	16	7	1	1	1	1	1	1	1	1	4	4	4	4
Garrett.....	4,149	55	13.2	9	5	1	1	1	9	3	1	2	1	2	1	2	2	5	1	5	5	5
Sullivan.....	4,115	55	13.3	8	6	1	1	1	18	9	1	1	1	1	1	4	4	3	2	2	2	2
Tipton.....	4,075	47	11.5	3	2	2	3	1	16	6	1	1	1	1	2	3	3	3	1	3	3	3
Boonville.....	3,934	73	18.5	10	7	4	2	3	17	10	4	3	3	2	2	2	2	3	2	3	3	3
Lawrenceburg.....	3,930	52	13.2	3	3	1	1	1	23	6	1	1	1	1	10	1	1	1	3	6	6	6
Auburn.....	3,919	39	9.9	5	1	1	1	1	14	4	3	1	1	4	1	2	2	1	3	5	5	5
Plymouth.....	3,838	63	16.4	5	2	3	2	1	29	6	1	1	1	1	1	3	3	1	2	3	3	3
Greencastle.....	3,790	42	11.0	2	4	2	1	1	17	5	1	1	1	1	1	1	1	1	2	3	3	3
Columbia City.....	3,448	40	11.6	6	1	1	1	1	22	2	1	1	1	1	7	7	1	1	3	5	5	5

TABLE No. 6—Continued.

CITIES.	Population.	Total Deaths Reported for Year 1911.	Annual Death Rate Per 1,000 Population.	IMPORTANT AGES.						DEATHS FROM IMPORTANT CAUSES.															
				Under 1 Year.	1 to 4 Inclusive.	5 to 9 Inclusive.	10 to 14 Inclusive.	15 to 19 Inclusive.	65 Years and Over.	Pulmonary Tuberculosis.	Other Forms of Tuberculosis.	Typhoid Fever.	Diphtheria and Croup.	Scarlet Fever.	Measles.	Whooping Cough.	Lobar and Broncho Pneumonia.	Diarrhoea and Enteritis (Under 2 Years).	Cerebro-Spinal Fever.	Acute Anterior Poliomyelitis.	Influenza.	Puerperal Septicemia.	Cancer.	External Causes.	Smallpox.
Mitchell.....	3,438	55	16.0	9	8	2	1	3	8	3	1	4	2			2	9	1			3	1		5	
Tell City.....	3,369	60	17.8	6	5	2	2	6	14	9	3	3	1				9	4			1			2	0
Rochester.....	3,364	59	17.5	4	1	1	1	2	23	5	3	1					9	1					1	7	0
Attica.....	3,335	46	13.8	7	4	4	1	2	17	5	3				2		9	1			1		1	2	3
Gas City.....	3,224	36	11.1	6	4	3	1	2	7	7	1			3		1	9	2					1	2	0
Union City.....	3,209	50	15.5	3	2	1	1	1	19	6	1	2					1	1			1		1	0	0
Dunkirk.....	3,031	39	12.8	6	1	1	1	1	14	1	2	2					1				3		3	1	2
North Vernon.....	2,915	45	15.4	3	5	1	1		16	5	1						1				1		1	3	1
Montpelier.....	2,786	18	6.4	4	4	1		2	3	7		1					1	1			1		2	2	1
Rockport.....	2,736	52	19.0	5	4		1	2	19	4	2		1				1						0	1	1
Angola.....	2,610	45	17.2	5	6		2	1	19	4	2						2				1		1	0	2
Huntingburg.....	2,464	32	12.9	3	3	1		2	13	3	1					1	10							2	2
Rensselaer.....	2,393	35	14.6	3	2	1		2	15	4	1						1						2	3	2
Ligonier.....	2,173	24	11.0	2	1				12	1				1			1	1			1		2	3	2
Monticello.....	2,163	32	14.7	6	3		1	1	10	4	1						1	2					1	1	1
Delphi.....	2,161	25	11.5	2	2	1			9	2	1			1			1					1		3	2
Loogootee.....	2,154	41	19.0	7	6		2	1	11	3	1	3					3	3			3		4	3	2
Cannelton.....	2,130	30	14.0	5	1	1	2	1	11	4	1	2					6						2	3	5
Covington.....	2,069	34	16.4	6	2	2	1		12	4	1	1			1									2	5
Butler City.....	1,818	13	7.1	2	2			5	5	1	1						1						1	1	1
Veedsburg.....	1,757	21	11.9	2	3			1	10	1	1	1		2			2							1	1
Rising Sun.....	1,513	48	31.7	4				1	24	3	1	1					6				2			3	3
Veray.....	1,266	20	15.9			1			7	2	1	2									3			1	1

TABLE No. 7.
Death Rates by Cities for the Year 1911.

CITIES.	Population.	Total Deaths Reported for Year 1911.	Annual Death Rate Per 1,000 Population.	DEATHS FROM IMPORTANT CAUSES.																													
				Pulmonary Tuberculosis.	Other Forms of Tuberculosis.	Typhoid Fever.	Diphtheria and Croup.	Scarlet Fever.	Measles.	Whooping Cough.	Lobar and Bron- cho-Pneumonia.	Diarrhea and En- teritis. (Under 2 Years.)	Cerebro-Spinal Fever.	Acute Anterior Polio-myelitis.	Influenza.	Puerperal Septicemia.	Cancer.	External Causes.	Smallpox.														
Cities of First Class. Population 100,000 and over.....	233,650	3,528	15.1	154.5	39.3	26.5	17.9	3.4	1.2	7.2	108.7	58.6	1.2	.8	13.2	6.8	80.4	110.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Indianapolis.....	233,650	3,528	15.1	154.5	39.3	26.5	17.9	3.4	1.2	7.2	108.7	58.6	1.2	.8	13.2	6.8	80.4	110.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cities of Second Class. Population 45,000 to 100,000.....	245,421	3,511	14.3	145.0	26.4	26.8	17.5	8.1	12.2	11.8	114.5	80.2	.8	.8	13.8	15.8	85.9	115.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Evansville.....	69,647	1,065	15.6	178.0	17.1	15.9	14.3	1.4	34.4	17.1	142.1	110.5	2.8	1.4	13.6	10.5	97.6	99.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pt. Wayne.....	63,933	751	11.7	103.3	25.0	21.9	18.3	9.3	.....	6.2	96.9	21.9	.....	.....	14.0	15.6	87.6	131.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Terre Haute.....	58,157	916	15.7	156.5	32.6	30.9	12.0	8.5	.....	15.4	123.8	63.6	.....	1.5	18.9	20.6	79.1	132.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
South Bend.....	53,684	769	14.1	139.7	27.9	37.2	26.0	14.9	11.1	1.8	89.4	128.5	.....	.....	3.7	18.6	76.3	98.7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cities of Third Class. Population 20,000 to 45,000.....	130,440	1,830	14.0	150.3	38.3	26.8	17.6	7.6	4.6	19.9	98.1	55.9	.....	.7	28.3	9.2	85.8	140.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Muncie.....	24,005	312	13.0	175.0	37.4	29.1	.....	4.1	.....	54.1	108.3	45.8	.....	.....	1.2	1.2	137.5	125.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Anderson.....	22,476	305	13.5	137.9	44.4	17.8	13.3	17.8	17.8	22.2	120.2	31.1	.....	.....	35.6	8.8	57.8	106.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Richmond.....	22,324	273	12.1	125.5	53.7	4.4	26.8	4.4	.....	13.4	71.6	31.3	.....	.....	26.8	.....	94.0	103.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hammond.....	20,925	282	13.4	105.1	28.2	38.2	23.8	9.5	.....	9.5	105.1	143.4	.....	.....	9.5	14.3	38.8	210.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Albany.....	20,639	318	15.4	184.3	33.9	33.9	38.8	4.8	9.7	14.5	87.3	67.9	.....	.....	29.1	14.5	87.3	121.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lafayette.....	20,061	341	16.9	174.3	29.8	24.9	4.9	4.9	.....	.....	94.6	19.9	.....	4.9	59.7	4.9	94.6	184.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

TABLE No. 7—Continued.

CITIES.	Popula- tion.	Total Deaths Reported for Year 1911.	Annual Death Rate Per 1,000 Population.	DEATHS FROM IMPORTANT CAUSES.																Smallpox.
				Pulmonary Tuberculosis.	Other Forms of Tuberculosis.	Typhoid Fever.	Diphtheria and Croup.	Scarlet Fever.	Measles.	Whooping Cough.	Lobar and Bron- cho-Pneumonia.	Diarrhea and En- teritis. (Under 2 Years.)	Cerebro-Spinal Fever.	Acute Anterior Polyomyelitis.	Influenza.	Puerperal Septicemia.	Cancer.	External Causes.		
Cities of Fourth Class. Population 10,000 to 20,000.....	209,556	2,930	13.9	126.5	21.9	35.7	23.3	14.3	8.5	14.7	109.3	121.2	.4	3.3	16.2	9.0	67.7	123.1	.4	
Marion.....	19,359	256	13.2	108.5	31.0	41.3	25.8	15.5	5.1	46.4	67.1	61.9	5.1	.....	31.0	10.3	67.1	67.1	.....
Elkhart.....	19,282	269	13.9	177.8	10.3	15.5	5.0	15.5	5.1	15.5	82.9	25.9	.....	.....	10.3	.....	62.2	84.1	.....
East Chicago.....	19,098	300	15.7	123.7	.....	26.1	10.4	31.4	26.1	5.2	277.5	424.1	.....	10.4	10.4	5.2	26.1	104.7	.....
Leansport.....	19,050	255	13.3	126.0	21.0	5.2	21.0	10.5	10.5	5.2	78.7	42.0	.....	5.2	31.5	10.5	115.5	110.2	5.2
Michigan City.....	19,027	252	13.2	162.9	15.7	21.0	5.2	36.7	.....	.....	110.3	110.3	.....	.....	10.5	5.2	26.2	141.9	.....
Kokomo.....	17,010	209	12.2	147.2	23.5	29.4	23.5	11.7	11.7	11.7	70.5	64.6	.....	11.7	23.5	11.7	88.1	105.8	.....
Gary.....	16,802	299	17.8	199.5	11.9	29.7	71.4	11.9	11.9	29.7	136.9	381.0	.....	5.9	33.5	17.8	41.6	381.0	.....
Vincennes.....	14,886	256	17.1	234.9	40.2	26.6	46.9	6.7	26.8	6.7	174.5	46.9	.....	.....	.....	13.4	100.7	147.6	.....
Midwaka.....	11,886	157	13.2	58.8	25.2	84.1	16.8	33.6	25.2	.....	100.9	67.2	.....	.....	.....	.....	16.8	84.1	.....
Elwood.....	11,028	106	9.6	90.6	18.1	45.3	27.1	18.1	.....	.....	46.3	54.4	.....	.....	.....	9.0	36.2	84.4	.....
Peru.....	10,910	149	13.6	119.2	27.5	174.2	9.1	.....	.....	.....	73.3	18.3	.....	.....	9.1	18.3	54.9	128.3	.....
Laporte.....	10,535	171	16.2	114.0	19.0	19.0	19.0	9.4	.....	28.6	152.0	114.0	.....	.....	9.4	9.4	161.4	178.0	.....
Jeffersonville.....	10,412	184	17.6	259.3	57.6	19.2	19.2	.....	48.0	.....	48.0	163.3	.....	.....	38.4	.....	85.4	105.6	.....
Huntington.....	10,272	127	12.3	107.1	29.2	19.4	29.2	.....	9.7	9.7	38.9	.....	.....	9.7	19.4	.....	97.3	68.1	.....
Cities of Fifth Class. Population under 10,000.	328,210	4,638	14.1	155.4	28.3	25.2	13.7	6.3	10.9	9.1	99.0	65.8	.3	2.7	24.6	7.6	78.9	107.7	.3	
Brazil.....	9,540	151	15.8	136.3	10.4	10.4	31.4	.....	20.9	20.9	41.9	115.3	.....	10.4	62.9	20.9	73.3	62.9	.....
Shelbyville.....	9,600	142	14.9	186.5	42.1	21.0	.....	.....	.....	10.6	94.7	21.0	.....	.....	10.5	10.5	52.6	136.8	.....
New Castle.....	9,446	129	13.6	137.6	10.3	31.7	.....	.....	31.7	31.7	137.6	116.5	10.5	10.5	.....	.....	31.7	148.2	.....
Crawfordsville.....	9,371	124	13.2	117.4	21.3	21.3	21.3	.....	11.3	10.6	74.7	42.6	.....	21.3	64.0	21.3	64.0	128.1	.....
Bloomington.....	8,838	140	15.8	248.9	11.3	11.3	.....	.....	.....	.....	101.8	135.8	.....	.....	45.2	22.6	45.2	147.1	.....

TABLE No. 7—Continued.

CITIES.	Popu- lation.	Total Deaths Reported for Year 1911.	Annual Death Rate Per 1,000 Population.	DEATHS FROM IMPORTANT CAUSES.															
				Pulmonary Tuberculosis.	Other Forms of Tuberculosis.	Typhoid Fever.	Diphtheria and Croup.	Scarlet Fever.	Miscellaneous.	Whooping Cough.	Lobar and Bron- cho-Pneumonia.	Diarrhea and En- teritis. (Under 2 Years.)	Cerebro-Spinal Fever.	Acute Anterior Polyomyelitis.	Influenza.	Puerperal Septicemia.	Cancer.	External Causes.	Smallpox.
Mitchell.....	3,438	55	16.0	87.2	29.0	116.4	56.8	.....	.....	56.8	174.5	29.0	.....	.....	29.0	56.8	145.5	.....
Tell City.....	3,369	60	17.8	267.1	87.1	89.0	29.6	.....	.....	.....	178.1	118.7	.....	.....	89.0	59.3	178.1	.....
Rochester.....	3,364	59	17.5	148.7	89.1	.....	.....	.....	.....	.....	88.1	29.7	.....	.....	29.7	208.1	89.1	.....
Attica.....	3,335	46	13.8	150.0	29.9	.....	.....	.....	59.9	.....	59.9	120.0	.....	.....	29.9	59.9	29.9	.....
Gas City.....	3,224	36	11.1	217.1	.....	.....	.....	93.0	.....	31.0	124.1	62.0	.....	.....	.....	31.0	124.1	.....
Union City.....	3,209	50	15.5	187.1	.....	.....	.....	.....	.....	.....	31.1	31.1	.....	.....	31.1	187.1	187.1	.....
Dunkirk.....	3,031	39	12.8	33.0	65.9	65.9	.....	.....	.....	.....	33.0	.....	.....	.....	98.9	98.9	65.9	.....
North Vernon.....	2,915	45	15.4	171.5	.....	.....	.....	.....	.....	.....	274.5	35.9	.....	.....	102.9	102.9	34.3	.....
Montpelier.....	2,786	18	6.4	107.7	.....	.....	.....	.....	.....	.....	35.9	36.5	.....	.....	36.5	71.8	35.9	.....
Rockport.....	2,736	52	19.0	255.8	.....	36.5	.....	.....	.....	.....	219.3	36.5	.....	.....	.....	73.0	146.2	.....
Angola.....	2,610	45	17.2	153.3	76.6	.....	.....	.....	.....	.....	76.6	40.5	.....	.....	38.3	230.0	76.6	.....
Huntingburg.....	2,464	32	12.9	162.4	40.5	40.5	.....	.....	40.5	40.5	405.9	40.5	.....	.....	.....	202.0	83.5	.....
Rensselaer.....	2,393	35	14.6	125.4	41.7	.....	.....	46.0	46.0	.....	41.7	.....	.....	.....	.....	138.0	46.0	.....
Ligonier.....	2,173	24	11.0	.....	.....	.....	.....	.....	46.1	.....	46.1	92.2	.....	.....	46.1	92.2	46.1	.....
Monticello.....	2,163	32	14.7	184.5	46.1	.....	.....	.....	46.1	.....	46.1	.....	.....	.....	.....	.....	.....	.....
Delphi.....	2,161	25	11.5	92.5	46.2	.....	.....	46.1	.....	.....	46.1	.....	.....	.....	46.1	185.8	139.3	.....
Loogootee.....	2,154	41	19.0	139.3	46.4	139.3	.....	.....	.....	.....	139.3	139.3	.....	.....	139.3	185.8	139.3	.....
Cannelton.....	2,130	30	14.0	187.8	46.9	46.9	93.8	.....	.....	.....	281.7	96.6	.....	.....	.....	96.6	93.8	.....
Corvaton.....	2,069	34	16.4	193.4	48.3	48.3	.....	.....	48.3	.....	.....	.....	.....	.....	.....	96.6	241.7	.....
Buller City.....	1,818	13	7.1	55.0	.....	.....	.....	113.8	.....	.....	55.0	.....	.....	.....	.....	55.0	55.0	.....
Veederburg.....	1,757	21	11.9	56.9	66.1	66.1	.....	.....	.....	.....	113.8	.....	.....	.....	.....	56.9	56.9	.....
Rising Sun.....	1,613	48	31.7	198.3	66.1	66.1	.....	.....	.....	.....	396.6	.....	.....	.....	132.2	198.3	132.2	.....
Vevay.....	1,266	20	15.9	159.3	.....	159.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	79.6	79.6	.....

TABLE No. 8.

Annual Death Rates for Ten Years, 1902 to 1911 Inclusive, With Average of Cities of 5,000 (Estimated) Population and Over, Compared with Rural and State Rates.

	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911, State Pop- ulation, 2,700,876.	Rate for 1911.	Aver- age.
CITIES—										Popula- tion.		
Indianapolis....	16.2	18.1	17.4	16.0	16.4	16.4	14.3	14.8	16.4	233,650	15.1	16.1
Evansville....	11.2	14.7	14.9	14.4	15.1	13.8	14.4	15.0	13.4	69,647	15.5	14.2
Ft. Wayne....	14.1	14.8	14.0	13.9	16.3	15.7	14.6	13.7	13.0	63,933	11.7	14.1
Terre Haute....	20.6	18.3	23.1	21.0	22.5	17.2	17.2	18.0	16.2	68,157	15.7	19.0
South Bend....	14.6	19.2	15.9	17.1	16.8	16.1	16.3	17.3	14.1	53,684	14.1	16.1
Muncie.....	16.7	18.1	17.8	16.0	14.8	15.7	15.9	15.1	15.3	24,005	13.0	15.8
Anderson....	16.7	14.6	15.5	12.1	13.3	13.1	11.2	14.5	14.6	22,476	13.5	14.8
Richmond....	18.3	14.0	15.8	14.0	16.1	15.2	15.6	16.8	13.9	22,324	12.1	15.1
Hammond....	18.1	19.1	15.4	15.2	17.9	17.2	14.6	13.8	14.6	20,925	13.4	15.9
New Albany....	17.4	16.6	18.1	18.1	16.1	17.6	15.8	14.2	18.2	20,629	15.4	16.7
Lafayette....	17.9	18.4	21.5	21.6	18.6	16.0	17.7	19.4	16.6	20,081	16.9	18.4
Marion....	15.5	17.5	16.6	14.0	13.6	11.5	9.6	11.0	12.5	19,359	13.2	13.4
Elkhart....	12.5	14.3	15.4	13.6	14.0	14.2	13.4	14.2	13.9	19,282	10.8	13.6
East Chicago..	10.1	9.3	12.4	14.5	18.5	32.2	26.5	29.0	15.3	19,098	15.7	18.3
Logansport....	15.1	15.9	17.6	17.1	16.0	14.8	18.4	16.6	15.9	19,050	13.3	16.0
Michigan City.	14.5	18.6	14.7	14.1	14.3	15.4	12.1	11.5	14.7	19,027	13.2	14.3
Kokomo....	16.1	20.8	18.5	18.7	20.0	18.1	19.7	17.3	15.1	17,010	12.2	17.6
Gary.....										16,802	17.8	
Vincennes....	17.8	15.1	22.2	20.7	20.0	18.5	18.6	15.4	19.2	14,895	17.1	18.4
Mishawaka....	13.8	17.0	19.2	24.3	21.4	21.9	30.0	13.5	11.6	11,886	13.2	16.8
Elwood.....	14.0	14.7	13.4	11.6	8.4	8.6	9.4	10.1	15.6	11,028	9.6	11.5
Peru.....	13.4	12.1	13.3	11.2	13.8	13.5	12.0	15.4	13.3	10,910	13.6	13.1
Lafayette....	13.7	17.3	18.2	17.5	20.7	19.8	15.0	15.9	17.8	10,525	16.2	17.2
Jeffersonville..	19.5	21.7	20.3	17.3	19.7	20.2	13.1	15.0	19.2	10,412	17.6	18.3
Huntington....	13.2	16.5	17.1	12.7	13.4	12.2	14.0	14.6	18.6	10,272	12.3	14.4
Brasil.....	14.1	8.0	20.0	12.5	12.8	16.9	13.3	13.0	11.6	9,540	15.8	13.8
Shelbyville....	13.7	14.7	16.5	16.5	16.4	14.0	11.7	14.3	13.5	9,600	14.9	14.6
Newcastle....										9,446	13.6	
Crawfordsville..	17.4	13.9	20.5	20.0	20.3	22.1	19.7	22.4	15.0	9,371	13.2	18.4
Bloomington....	17.3	14.8	16.9	18.9	19.7	14.7	14.9	17.2	18.6	8,638	15.8	16.8
Columbus....	15.8	15.8	18.5	14.8	17.1	15.1	17.7	14.8	17.2	8,813	13.7	16.0
Bedford.....	12.4	11.3	19.5	18.1	18.0	19.2	16.8	14.8	15.8	8,716	12.5	15.8
Wabash.....	13.8	9.8	14.3	12.7	13.0	12.0	14.6	13.5	12.8	8,687	13.3	12.9
Frankfort....	14.1	17.0	15.1	20.0	18.7	17.6	17.2	14.8	10.4	8,634	12.1	15.7
Goshen.....	11.8	11.1	12.5	14.0	18.1	16.3	15.3	13.0	13.2	8,514	13.2	13.9
Washington....	14.6	15.5	15.9	14.2	16.5	11.5	13.2	11.0	12.8	7,854	14.1	13.9
Connersville....	13.2	13.9	17.6	14.8	15.3	15.3	18.6	16.6	13.3	7,738	13.5	15.2
Valparaiso....	10.9	13.9	15.6	11.5	12.4	11.2	13.3	12.3	12.7	6,987	11.1	12.4
Madison.....	18.0	18.1	17.7	15.0	18.4	19.8	19.7	19.0	20.9	6,934	17.5	18.4
Whiting.....			11.4	10.3	14.1	14.7	13.5	14.0	13.3	6,687	12.6	16.3
Princeton.....	10.9	9.6	15.3	17.2	13.9	14.5	19.2	18.9	16.1	6,448	15.0	15.0
Seymour.....	12.9	13.0	16.1	15.8	15.6	16.6	21.6	20.0	11.7	6,305	14.4	15.7
Clinton.....										6,229	13.6	
Hartford City..	12.0	11.1	13.0	12.0	8.8	11.9	9.8	11.2	15.2	6,187	16.4	12.1
Linton.....	8.6	9.7	12.5	11.8	11.7	10.4	10.6	11.2	14.3	5,906	12.5	11.3
Mt. Vernon....	22.4	16.0	17.9	18.4	17.9	18.8	15.1	11.5	15.2	5,563	16.3	16.9
Lebanon.....										5,474	18.8	
Greensburg....	17.6	16.9	18.5	16.2	21.2	14.7	17.5	20.0	14.7	5,420	20.8	17.8
Portland.....										5,130	15.0	
Alexandria....	13.9	14.1	11.4	4.4	6.9	7.9	9.9	12.1	11.1	5,096	14.1	10.7
Noblesville....							10.9	11.3	12.6	5,073	15.1	
URBAN.....	15.3	15.4	16.8	15.8	16.4	15.6	13.4	15.1	15.1	1,147,277	14.3	15.3
RURAL.....	13.3	12.9	14.2	13.9	13.3	11.6	11.6	11.1	12.3	1,553,599	12.0	12.6
STATE.....	12.8	12.2	13.5	13.7	13.5	13.4	12.5	13.3	13.5	2,700,876	13.0	13.1

TABLE No. 9.

Showing Deaths by Occupations and Ages for the Year Ending December 31, 1911.

OCCUPATIONS.	Sex.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Actors and actresses.....	Males..... Females.....							1					2
Aeronauts and aviators.....	Males..... Females.....								2				
Architects.....	Males..... Females.....		2		1	1	1	1	1				
Artists and authors.....	Males..... Females.....		1	1	1	1		1	1				1
Athletes.....	Males..... Females.....				1							1	1
Bakers and confectioners.....	Males..... Females.....	1	1	4		1	2	2	3	3	5	2	3
Bankers, brokers and officials of companies.....	Males..... Females.....	1	5	3	1	2	3	2	1	5	3	2	
Barbers.....	Males..... Females.....	5	8	9	5	3	5	10	4	5	12	9	7
Bar-tenders.....	Males..... Females.....	14	6	6	14	7	12	7	7	9	5	6	5
Basket makers.....	Males..... Females.....	2		1									
Blacksmiths.....	Males..... Females.....	19	13	12	20	13	11	23	10	9	11	11	16
Bookbinders.....	Males..... Females.....	1			1	1							

Bookkeepers, clerks and copyists.....	Males.....	6	5	6	5	9	9	9	10	6	8	10	21
	Females.....	2	3	1	1	.....	2	4	1	1	.....	1	3
Brewers, distillers, etc.....	Males.....	5	1	.....	.....	.....	3	1	1	2	1	.....	.....
	Females.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Brickmakers.....	Males.....	3	.....	1	1	2	1	1	1	.....	.....	.....	.....
	Females.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Builders and contractors.....	Males.....	6	8	8	11	10	6	4	10	6	2	7	10
	Females.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Butchers.....	Males.....	7	2	3	11	2	3	4	5	5	4	4	4
	Females.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cabinet makers.....	Males.....	5	5	4	2	1	4	.....	3	6	5	6	6
	Females.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Carpenters.....	Males.....	37	34	35	34	39	24	28	18	27	35	31	37
	Females.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Carriage and wagon makers.....	Males.....	.....	1	3	2	2	1	7	3	5	1	4	3
	Females.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cashiers.....	Males.....	.....	.....	.....	.....	.....	1	.....	2	.....	1	1	1
	Females.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chauffeurs.....	Males.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	1
	Females.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chemists and druggists.....	Males.....	2	6	2	3	3	1	6	3	4	6	5	9
	Females.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chiropractors.....	Males.....	.....	.....	.....	1	.....	1	1	1	.....	.....	.....	.....
	Females.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cigar makers.....	Males.....	4	2	3	1	3	3	1	1	.....	2	3	2
	Females.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Cleaners and dyers.....	Males.....	.....	.....	2	.....	.....	1	1	.....	.....	.....	.....	.....
	Females.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Clergymen.....	Males.....	8	8	10	11	8	4	8	4	3	5	6	14
	Females.....	1	1	.....	.....	1	.....	1	1	.....	.....	.....	1
Collectors, agents and auctioneers.....	Males.....	7	12	13	8	8	11	7	3	8	2	5	8
	Females.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....

TABLE No. 9—Continued.

OCCUPATIONS.	Sex.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Commercial travelers.....	Males..... Females.....	4	4	3	3	3	4	4	3	1	1	2	9
Compositors, printers and pressmen.....	Males..... Females.....	1	2	3	5	5	4	5	6	5	2	7	2
Cooks and caterers.....	Males..... Females.....	3 3	2 5	2 1	2 3	3	1 1	1	2 1	1 1	2	1	3 3
Coopers.....	Males..... Females.....	5	4	3	2	3	3	3	1	1	2	2	1
Dairymen.....	Males..... Females.....	2	2	1	2	2	1	1	1	1	1	2	2
Dentists.....	Males..... Females.....	1	2	3*	3	2	1	2	1	1	2	1	2
Draftsmen.....	Males..... Females.....	1	1	1	1	1	1	1	1	1	1	1	1
Electricians.....	Males..... Females.....	2	6	4	6	4	1	5	4	7	6	2	4
Electric railway employes.....	Males..... Females.....	3	1	1	1	1	4	4	3	1	2	1	1
Elevator operators.....	Males..... Females.....	2	2	1	1	1	1	1	1	1	1	1	1
Engineers and firemen (railway).....	Males..... Females.....	15	8	14	15	13	12	12	22	9	13	10	13
Engineers and firemen (stationary).....	Males..... Females.....	1	2	1	1	2	1	6	2	1	1	1	4
Engravers.....	Males..... Females.....	2	1	1	1	1	1	1	1	1	1	1	1
Factory employes.....	Males..... Females.....	13 4	9	9 1	9	7 2	11 1	9 2	13	13	2 1	4	5

Farmers.....	Males.....	451	448	453	452	381	315	386	368	347	350	333	390
	Females.....												
Firemen (city).....	Males.....				1								1
	Females.....												
Furriers.....	Males.....												
	Females.....												
Gardeners, florists and nurserymen.....	Males.....	6	4	7	3	3	2	3	2	6	4	1	4
	Females.....												
Classworkers.....	Males.....	8	4	6	5	10	7	8	5	8	2	2	5
	Females.....												
Government employes.....	Males.....	2	1				1	2		1			
	Females.....												
Government officials.....	Males.....												
	Females.....												
Hairdressers, manicurists and masseurs.....	Males.....					1		2		1			
	Females.....												
Harness makers and saddlers.....	Males.....	3	3	2		4	4	4	3		2	3	4
	Females.....												
Hotel and boarding house keepers.....	Males.....	2		4	2	6	2	5	1	5	5	3	2
	Females.....		1				1		1	1	1	1	1
Housework (general).....	Males.....	930	843	896	847	766	666	684	676	610	652	730	886
	Females.....												
Hunters and fishermen.....	Males.....		1					1	1		1		
	Females.....												
Inspectors.....	Males.....	5	4	1	4	2	2		1	1		2	2
	Females.....		2										
Janitors and janitresses.....	Males.....	5	4	2	4	3		3	1	2	2	3	
	Females.....				1								
Journalists and publishers.....	Males.....	3	1	2		3	1	1	1		1	2	1
	Females.....												
Labors.....	Males.....	201	186	191	200	171	154	176	195	151	176	178	197
	Females.....												

TABLE No. 9—Continued.

OCCUPATIONS.	Sex.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Laundresses and laundresses.	Males. Females.	4	1		1 1	1 2	2 1	1 1	1 1	1 4	1		1 3
Lawyers.	Males. Females.	6	7	6	4	6	9	5	5	6	4	2	5
Librarians.	Males. Females.												
Liverymen.	Males. Females.	3	4	2	1	3	2	1	3	2	1	4	5
Lumbermen.	Males. Females.	5	1		1	3	2	4	4	4	2		
Machinists.	Males. Females.	16	14	17	12	16	3	10	7	7	11	8	20
Mail service.	Males. Females.	1	3	2	1		1	2	2	2	6	3	1
Managers and superintendents.	Males. Females.	7	9	3	6	11	3	11	5	7	6	7	3
Manufacturers.	Males. Females.	4	5	6	8	7	5	6	2	2	2	5	3
Marble and stone cutters.	Males. Females.	2	2	2	1	2	1	1	2		2	3	1
Masons.	Males. Females.	6	8	13	5	7	7	5	5	6	8	4	7
Mechanics.	Males. Females.	14	9	11	7	10	16	12	11	11	5	11	7
Merchants and dealers.	Males. Females.	44	31	43	53	35	29	27	29	29	27	34	54
Messengers and porters.	Males. Females.	3	1	2		4	2	1	2	2	3	6	4

Millers.....	Males.....	4	3	4	1	3	2	3	2	3	5
	Females.....										
Milliners and seamstresses.....	Males.....	4	5	10	4	7	6	4	3	7	9
	Females.....										
Miners and quarrymen.....	Males.....	25	19	27	14	20	16	19	11	10	24
	Females.....										
Molders, iron and steel workers.....	Males.....	4	3	4	11	6	6	8	7	8	2
	Females.....										
Musicians.....	Males.....	1		5	1	2	3	2	3	2	1
	Females.....			3			2		1		
Nuns.....	Males.....	1	1	4	4	1	1	4	4		1
	Females.....										
Nurses.....	Males.....	4	4	1	2	5	3	1	3	1	3
	Females.....										
Oculists and opticians.....	Males.....						1				
	Females.....										
Oil workers.....	Males.....	4	3		1	1		2	1	2	2
	Females.....										
Osteopaths.....	Males.....										
	Females.....										
Packers.....	Males.....					1		2		1	1
	Females.....										
Painters, glaziers and varnishers.....	Males.....	15	10	7	18	13	16	17	12	10	13
	Females.....										
Paper hangers, decorators and window dressers.....	Males.....	2	1	1		1	1	1	1	1	1
	Females.....										
Peddlers.....	Males.....		1	3	2	2		5	2	1	4
	Females.....										
Photographers.....	Males.....		1			1	1	1	3		1
	Females.....										
Physicians and surgeons.....	Males.....	12	3	10	9	12	8	12	12	6	8
	Females.....		2		1	1	1		1	1	1

TABLE No. 9—Continued.

OCCUPATIONS.	Sex.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Plasterers and lathers	Males..... Females.....	3	3	2		4	2	4	4	2	3	5	1
Plumbers	Males..... Females.....	1	1	3	2	1	2	3	4	3	3	3	2
Policemen, detectives and watchmen	Males..... Females.....	3	2	8	5	2	4	4	5	3	2	7	3
Potters	Males..... Females.....	1	1					1	1	1	1	1	4
Professors and teachers	Males..... Females.....	2 7	6 3	4 4	3 5	2 1	3 7	3 6	3 2	3 8	7 2	9 5	2 5
Public officials	Males..... Females.....		1	8	2	5			5		2	2	1
Sailors	Males..... Females.....	2	2	1	1	1	3	1	2	2			
Salesmen and saleswomen	Males..... Females.....	25 3	20 5	25	20 2	19 1	22 2	14 3	18 4	8 4	15 1	15 3	6 1
Scientists	Males..... Females.....												
Servants, caretakers and attendants	Males..... Females.....	4 17	4 18	8 22	2 18	2 12	2 9	3 18	2 20	3 13	2 11	1 13	4 16
Shoemakers	Males..... Females.....	3	8	3	13	11	3	4	12	5	7	6	4
Steam railway employees	Males..... Females.....	31	31	21	25	19	25	25	15	24	14	20	15
Stenographers and secretaries	Males..... Females.....			2 2		2 1	1	2 1		1 2	1 4		2 2
Stock dealers	Males..... Females.....	2	2	4	1	4	3	3	3	3	2		

Students.....	Males.....	12	7	13	9	8	9	7	8	6	9	9	7
	Females.....	9	9	3	7	6	3	3	6	5	4	6	3
Surveyors and civil engineers.....	Males.....	1	1		1		1	2	2	1	2	1	1
	Females.....												
Tailors.....	Males.....	2	3	3	7	2	4	3	2	6	4	3	6
	Females.....							1			1		
Tanners and curriers.....	Males.....		2		2							1	
	Females.....												
Teamsters and drivers.....	Males.....	10	9	11	13	9	13	12	6	8	12	7	11
	Females.....												
Telegraph and telephone operators.....	Males.....	1	4	5	1	4	3	2	3	1	2	1	
	Females.....	1	2	1	1	3	1			3	2	1	1
Tinners.....	Males.....	1	2	3	1		1	2	4	4	3	3	5
	Females.....												
Undertakers.....	Males.....	1	2	1	1			3		2			
	Females.....								1				
Upholsterers.....	Males.....	1		1			1			1	1	1	
	Females.....												
Veterinary surgeons.....	Males.....	1	4						1	1	1	1	1
	Females.....												
Volunteer soldiers and pensioners.....	Males.....	5	3	6	8		2		2	3	2		1
	Females.....												
Watchmakers, jewelers and lapidaries.....	Males.....	1	2	2	1		1	2	1		3	1	3
	Females.....												
Weavers.....	Males.....	2						3					1
	Females.....				1							1	
No occupation reported.....	Males.....	155	148	177	163	143	126	150	140	138	127	120	149
	Females.....	313	284	299	287	212	183	240	174	188	223	247	246
Totals.....	Males.....	1,314	1,222	1,349	1,295	1,142	1,001	1,172	1,101	1,011	1,040	1,086	1,199
	Females.....	1,305	1,165	1,248	1,185	1,022	892	977	901	820	909	1,012	990
Total 15 years and over.....													
Under 15 years.....													
Grand total.....													

TABLE No. 9—Continued.

Showing Deaths by Occupations and Ages for the Year Ending December 31, 1911.

OCCUPATIONS.	SEX.	15	20	25	30	35	40	45	50	55	60	65	70	75	80	90	Un- known	Totals.
		to 19	to 24	to 29	to 34	to 39	to 44	to 49	to 54	to 59	to 64	to 69	to 74	to 79	to 89	to over.			Males	Females.
Actors and actresses.....	Males.....			1			1						1					3
	Females.....																	
Aeronauts and aviators.....	Males.....		2															2
	Females.....																	
Architects.....	Males.....				1		1		2	1	2							7
	Females.....																	
Artists and authors.....	Males.....						1		2	1			1	2				4
	Females.....																	3
Athletes.....	Males.....		1				1					1						3
	Females.....																	
Bakers and confectioners.....	Males.....	1	1	1	3	1	3		3	4	4	1	2	2	1			27
	Females.....	1							1									2
Bankers, brokers and officials of com- panies.....	Males.....					1	1	2	1	7	4	6		3	3			28
	Females.....																	
Barbers.....	Males.....	1	3	11	10	10	5	10	7	11	4	4	2	1	3			82
	Females.....																	
Bartenders.....	Males.....		1	6	11	20	16	16	6	9	4	7			2			98
	Females.....																	
Basket makers.....	Males.....																	3
	Females.....									1				2				
Blacksmiths.....	Males.....		5	5	1	4	12	12	6	11	19	18	21	27	24	3		168
	Females.....																	

TABLE No. 9—Continued.

OCCUPATIONS.	Sex.	15 to 19.										70 to 74	75 to 79	80 to 90	Un- known	Totals.	
		15 to 19.	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69				Males.	Females.
Collectors, agents and auctioneers	Males		2	4	4	8	6	8	10	12	6	10	13	6	1	2	92
	Females		1			1											2
Commercial travelers	Males		1		1	3	4	2	10	4	6	5	3	2			41
	Females																
Compositors, printers and pressmen	Males	3	9	2	4	2	4	7	4	1	3	4	2	2			47
	Females																
Cooks and caterers	Males					5	4	2	2	3	3	2			1		22
	Females	1		1	2	2	2	2	2	2	3				1		18
Coopers	Males			1						1	2	3	2	8	10		30
	Females																
Dairymen	Males		2				1	1	2	3		2					11
	Females																
Dentists	Males	1	1	1		2	4	2	1	2		1		3		17	
	Females																
Draftsmen	Males		2	1			1									4	
	Females																
Electricians	Males	3	14	6	9	7	1	4	3	2	1	1				61	
	Females																
Electric railway employes	Males		2	1	2	2	4	1		2						14	
	Females																
Elevator operators	Males	1									1	1				3	
	Females																
Engineers and firemen (railway)	Males	2	12	7	14	10	9	9	17	16	17	15	15	7	3	3	156
	Females																
Engineers and firemen (stationary)	Males	1	1		1	2	3	2	3			1	1	3	2		20
	Females																

Engravers.....	Males Females					1	1				1				1	1		4
Factory employes.....	Males Females	10 4	8 5	11 2	12	6	9	6	6	8	9	1	3	7				104
Farmers.....	Males Females	96 134	118 107	130	170	149	230	307	435	567	728	699	746	89	1	4,706	13	
Firemen (city).....	Males Females						1	1								2		
Furriers.....	Males Females																	
Gardeners, florists and nurserymen.....	Males Females	1	4			1	3	3	1	3	4	11	3	6	1		45	
Glassworkers.....	Males Females		6	13	11	5	7	5	7	1	5	3	3	1	3		70	
Government employes.....	Males Females		1				1	1		1	2	1				7		
Government officials.....	Males Females																	
Hairdressers, manicurists and masseurs.....	Males Females		1														4	
Harness makers and saddlers.....	Males Females				1	1	3	2	1	4	6	3	6	5			32	
Hotel and boarding house keepers.....	Males Females			3	1	3	6	8	3	8	2	2	1				37	
Housework (general).....	Males Females	194	512	543	583	557	519	663	669	756	924	934	737	762	100	3	8,986	
Hunters and fishermen.....	Males Females			1				1				1	1			4		
Inspectors.....	Males Females	1	2	1	4		1	2	3	3	6	1	1			24	2	
Janitors and janitresses.....	Males Females	1		1	1	2	2	3	4	1	5	6	2	1		29	1	

TABLE No. 9—Continued.

OCCUPATIONS	Sex.	15	20	25	30	35	40	45	50	55	60	65	70	75	80	90	Un- known	Totals.	
		to 19	to 24	to 29	to 34	to 39	to 44	to 49	to 54	to 59	to 64	to 69	to 74	to 79	to 89	and over.		Males.	Females.
Journalists and publishers	Males			1		1	1	1	1	3		2	1	1	4				16
	Females																		
	Males	92	179	168	164	180	175	144	162	204	183	196	132	108	98	11		2,176	
	Females																		
Laundresses and laundresses	Males				1				1	1	2		1						6
	Females		4	2	2	4		1	1	1	2			2					19
Lawyers	Males		1		2	2	4	3	4	7	6	15	9	9	3				65
	Females																		
Librarians	Males																		
	Females																		
Livestock	Males		1	1		3	5	2	4	5	2	4	3	1					31
	Females																		
Lumbermen	Males			1		2	1	1	1	5	6	3	2	1	3				26
	Females																		
Machinists	Males	12	14	6	14	11	11	11	14	7	10	8	11	8	4				141
	Females																		
Mail service	Males	1	3	2	2	2	2	1	2	1		3	5						24
	Females																		
Managers and superintendents	Males		4	2	3	7	10	8	8	11	8	10	3	3	1				78
	Females						2	2	2		1								5
Manufacturers	Males			3	1	4	1	5	8	6	7	5	4	4	6	1			85
	Females																		55
Marble and stone cutters	Males				2	1	1	1	1	2	7	2		1					18
	Females																		
Masons	Males		4			3	3	2	12	14	13	4	7	10	6				81
	Females																		

Mechanics.....	Males.....	3	5	9	7	12	10	14	14	12	7	12	5	5	9	124	.....
	Females.....																.....
Merchants and dealers.....	Males.....		4	12	16	25	22	28	44	51	51	53	39	49	39	2	435
	Females.....					2			1	2	1						6
Messengers and porters.....	Males.....	3	6	1	5	5	2		1	2	3	1	1			30	.....
	Females.....																.....
Millers.....	Males.....	1	2			1	2		1	2	3	4	7	1	6	30	.....
	Females.....																.....
Milliners and seamstresses.....	Males.....															1	65
	Females.....	2	8	5	7	6	4	7	6	6	1	9	1	2	1		.....
Miners and quarrymen.....	Males.....	11	22	15	22	30	19	24	22	20	12	12	10	3	3	225	.....
	Females.....																.....
Molders, iron and steel workers.....	Males.....	1	4	6	13	10	4	8	8	8	2	6	3	2		75	.....
	Females.....																.....
Musicians.....	Males.....	1	2	4	4	1	1	3	2	3	1		1	2		25	6
	Females.....		1	2	1		1			1							.....
Nuns.....	Males.....																21
	Females.....		1	1	2	1	1	3	1	2	3		2	1	2	1	.....
Nurses.....	Males.....	1						1		1						2	26
	Females.....		3	6	2	2	4	1	1	1	1	3		2	2		.....
Oculists and opticians.....	Males.....					1										1	.....
	Females.....																.....
Oil workers.....	Males.....			1	1	1	3	2	1	1	2	4		1		17	.....
	Females.....																.....
Osteopaths.....	Males.....																.....
	Females.....																.....
Packers.....	Males.....	1			1	1			1	1	1					6	.....
	Females.....																.....
Painters, glaziers and varnishers.....	Males.....	7	8	11	9	18	12	16	19	13	19	12	9	5	3	161	.....
	Females.....																.....
Paper hangers, decorators and window dressers.....	Males.....			4	2	1		1	3	1						12	.....
	Females.....																.....

Shoemakers.....	Males Females	1	2	2	3	2	6	3	10	10	12	14	11	3	79	
Steam railway employees.....	Males Females	5	37	24	18	16	26	13	19	15	22	16	6	9	11	205
Stenographers and secretaries.....	Males Females	1	4	1	3	1	1	1								11
Stock dealers.....	Males Females	1	1		1	3	3	1	4		4	3	1	1	1	24
Students.....	Males Females	84	16	3	1											104
Surveyors and civil engineers.....	Males Females	1	2	2							2	2	3	1	13	64
Tailors.....	Males Females	1	2	2	2	4	3	3	3	2	2	5	3	10	1	45
Tanners and curriers.....	Males Females				1	1				1				2		5
Teamsters and drivers.....	Males Females	3	7	8	11	8	11	8	9	14	12	14	10	2	4	121
Telegraph and telephone operators.....	Males Females	1	6	4	4	1	2	1	4	3	1					27
Tinners.....	Males Females	1	2	3	1	6	2	2	2	2	1	2	3	2		16
Undertakers.....	Males Females	1	1	1	1		1	1	1	1	3	1		1		12
Upholsterers.....	Males Females	1			1	1					1	1	1	1		1
Veterinary surgeons.....	Males Females			1					1	4	1	3				6
Volunteer soldiers and pensioners.....	Males Females	2	3	1			1		2		6	8	4	5		10
Watchmakers, jewelers and opticians.....	Males Females	1		1	2		1	2	2	2	2	3	1			32
																17

TABLE No. 10.

Deaths from Tuberculosis, all Forms, with Rates per 100,000 Population, for Certain Occupations of Each Sex, for year 1911.

OCCUPATIONS.	Number of Deaths 15 Years of Age and Over.	Death Rates per 100,000.
MALES.		
Farmers.....	428	15.8
Laborers.....	404	14.9
No occupation reported.....	175	6.4
Salesmen.....	43	1.5
Carpenters.....	38	1.4
Merchants and dealers.....	29	1.0
Painters, glaziers and varnishers.....	29	1.0
Factory employes.....	26	.9
Bookkeepers, clerks and copyists.....	25	.9
Machinists.....	25	.9
Students.....	24	.8
Mechanics.....	21	.7
Teamsters and drivers.....	20	.7
Steam railway employes.....	19	.7
Barbers.....	18	.6
Glassworkers.....	16	.5
Miners and quarrymen.....	16	.5
Bartenders.....	15	.5
Engineers and firemen (railway).....	14	.5
Collectors, agents and auctioneers.....	13	.4
Moulders, iron and steel workers.....	12	.4
Clergymen.....	10	.3
Compositors, printers and pressmen.....	8	.2
Messengers and porters.....	8	.2
Professors and teachers.....	8	.2
Servants, caretakers and attendants.....	8	.2
Blacksmiths.....	7	.2
Electricians.....	7	.2
Manufacturers.....	7	.2
Marble and stone cutters.....	7	.2
Physicians and surgeons.....	7	.2
Shoemakers.....	7	.2
Butchers.....	6	.2
Liverymen.....	6	.2
Mail service.....	6	.2
Managers and superintendents.....	6	.2
Musicians.....	6	.2
Secretaries and stenographers.....	6	.2
Tailors.....	6	.2
Telegraph and telephone operators.....	6	.2
Cabinet makers.....	5	.1
Carriage and wagon makers.....	5	.1
Chemists and druggists.....	5	.1
Cigar makers.....	5	.1
Gardeners, florists and nurserymen.....	5	.1
Paper hangers, decorators and window dressers.....	5	.1
Builders and contractors.....	4	.1
Hotel and boarding house keepers.....	4	.1
Inspectors.....	4	.1
Janitors.....	4	.1
Lumbermen.....	4	.1
Masons.....	4	.1
Sailors.....	4	.1
Tinners.....	4	.1
Volunteer soldiers and pensioners.....	4	.1
Bakers and confectioners.....	3	.1
Brewers, distillers, etc.....	3	.1
Cooks and caterers.....	3	.1
Electric railway employes.....	3	.1
Engineers and firemen (stationary).....	3	.1
Plumbers.....	3	.1
Watchmakers, jewelers and lapidaries.....	3	.1
Commercial travelers.....	2	.07

TABLE No. 10—Continued.

OCCUPATIONS.	Number of Deaths 15 Years of Age and Over.	Death Rates per 100,000.
MALES.		
Harness makers and saddlers.....	2	.07
Journalists and publishers.....	2	.07
Lawyers.....	2	.07
Plasterers and lathers.....	2	.07
Potters.....	2	.07
Public officials.....	2	.07
Cleaners and dyers.....	1	.03
Basket makers.....	1	.03
Dentists.....	1	.03
Draftsmen.....	1	.03
Government employes.....	1	.03
Millers.....	1	.03
Packers.....	1	.03
Peddlers.....	1	.03
Stock dealers.....	1	.03
Weavers.....	1	.03
FEMALES.		
General housework.....	1,357	50.2
No occupation reported.....	315	11.6
Servants, caretakers and attendants.....	43	1.5
Students.....	25	.9
Professors and teachers.....	15	.5
Saleswomen.....	14	.5
Nuns.....	10	.3
Bookkeepers, clerks and copyists.....	9	.3
Milliners and seamstresses.....	9	.3
Nurses.....	8	.2
Laundresses.....	4	.1
Musicians.....	4	.1
Factory employes.....	3	.1
Hairdressers, manicurists and masseurs.....	3	.1
Secretaries and stenographers.....	3	.1
Telegraph and telephone operators.....	3	.1
Tailors.....	2	.07
Artists and authors.....	1	.03
Bakers and confectioners.....	1	.03
Cashiers.....	1	.03
Collectors and agents.....	1	.03
Cooks and caterers.....	1	.03
Inspectors.....	1	.03
Millers.....	1	.03
Photographers.....	1	.03

TABLE No. 11.

*Poliomyelitis by Months, Ages and Counties, for the Year Ending
December 31, 1911.*

MONTHS.

January.....	7	July.....	2
February.....	4	August.....	9
March.....	1	September.....	6
April.....	5	October.....	16
May.....	7	November.....	5
June.....	2	December.....	3

AGES.

Under one year.....	12	Twenty-five to thirty years.....	.....
One to two years.....	18	Thirty to thirty-four years.....	1
Two to five years.....	17	Thirty-five to thirty-nine years.....	.....
Five to nine years.....	13	Forty to forty-four years.....	.....
Ten to fourteen years.....	5	Forty-five to forty-nine years.....	.....
Fifteen to twenty years.....	.....	Fifty years and over.....	1
Twenty to twenty-four years.....	.....	

COUNTIES.

Allen.....	2	Kosciusko.....	3
Benton.....	1	Lake.....	2
Brown.....	1	Laporte.....	2
Carroll.....	1	Lawrence.....	1
Cass.....	1	Madison.....	1
Clay.....	1	Marion.....	4
Dearborn.....	1	Montgomery.....	3
DeKalb.....	1	Orange.....	3
Delaware.....	1	Posey.....	1
Fountain.....	2	Putnam.....	1
Franklin.....	1	Rush.....	1
Fulton.....	1	Shelby.....	2
Gibson.....	5	Spencer.....	1
Hamilton.....	1	Steuben.....	1
Hancock.....	1	Tiptecanoe.....	2
Hendricks.....	1	Vanderburgh.....	5
Howard.....	2	Warrick.....	1
Huntington.....	1	Washington.....	1
Jackson.....	1	White.....	2
Johnson.....	1	Whitley.....	1
Knox.....	2		

Total males.....	35
Total females.....	32
Total.....	67

TABLE A.
Births by Months, Color, Nationality of Parents, for the Year Ending December 31, 1911. (Stillbirths excluded.)

COUNTIES.	1911.												Sex.			Color.				NATIONALITY OF PARENTS.					
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total No. Children.		White.		Colored.		American.	Foreign.		Not Re-ported.			
													Males.	Females.	Males.	Females.	Males.	Females.		Males.	Females.				
Adams.....	44	41	55	24	41	33	47	47	48	52	27	41	253	267	520	253	267	497	504	16	11	2			
Allen.....	134	167	154	154	140	147	145	155	133	146	151	132	915	846	1,761	912	845	1,547	1,600	199	152	6			
Bartholomew.....	37	35	43	34	35	24	41	34	53	40	40	43	253	226	479	252	225	473	475	2	1	1			
Benton.....	19	19	25	15	21	12	15	23	32	25	17	23	120	131	251	120	130	257	244	11	4	1			
Blackford.....	26	33	26	24	28	39	21	26	39	26	28	20	168	168	336	168	168	325	330	8	6	3			
Boone.....	43	39	47	32	51	35	39	39	39	32	41	49	257	229	486	256	229	479	480	2	1	1			
Brown.....	18	25	15	20	16	16	13	10	10	16	13	21	106	187	193	106	87	192	192	1	1	1			
Carroll.....	32	31	26	34	25	14	23	39	34	32	29	34	192	161	353	192	161	347	349	1	1	2			
Cass.....	67	66	65	66	70	64	57	80	68	62	60	61	375	371	746	371	370	703	714	30	26	3			
C. Ark.....	61	55	62	41	41	42	42	54	63	50	37	49	311	286	597	286	275	583	589	9	4	1			
Clay.....	56	68	81	55	49	43	50	71	53	45	54	68	347	346	693	341	342	662	668	25	18	1			
Cinton.....	42	38	46	36	38	35	43	40	57	55	42	34	270	253	523	270	252	514	517	4	2	1			
Crawford.....	21	33	21	12	21	25	28	23	34	22	20	27	140	147	287	140	147	282	292	1	1	1			
Davis.....	57	68	66	58	67	62	67	79	71	56	42	56	462	461	923	462	461	729	733	5	5	4			
Dearborn.....	34	29	37	39	37	24	36	37	33	28	38	34	266	200	466	266	198	384	391	12	5	4			
Deatur.....	28	34	25	18	27	25	26	23	30	26	15	42	180	149	329	179	149	323	327	2	2	1			
DeKalb.....	42	48	54	45	46	40	43	39	38	41	31	36	256	260	516	256	260	494	501	18	11	1			
Delaware.....	71	97	83	79	80	76	96	98	87	79	81	88	523	502	1,025	523	493	1,004	1,012	20	17	4			
Detroit.....	51	44	46	32	47	38	29	45	64	47	36	38	294	222	516	294	222	495	508	6	3	1			
Elkhart.....	89	89	91	90	100	83	82	88	186	77	71	81	513	514	1,027	513	513	961	961	65	61	2			

Fayette.....	31	24	23	26	30	22	30	23	29	22	25	31	167	149	316	162	148	5	1	310	313	4	2	1
Flood.....	43	41	62	48	41	56	60	44	52	46	46	46	276	305	581	266	290	10	15	562	571	13	6	3
Fountain.....	29	23	30	34	30	34	44	24	42	33	39	30	185	207	392	185	207	.....	.....	381	382	6	5	.....
Franklin.....	25	23	30	34	30	34	44	24	42	33	39	30	185	207	392	185	207	.....	.....	381	382	6	5	.....
Fulton.....	19	31	26	38	28	23	32	35	33	37	25	26	187	188	355	187	188	.....	.....	349	349	3	4	1
Gibson.....	63	55	66	50	52	54	68	75	59	63	62	65	378	354	732	366	343	12	11	714	724	3	1	8
Grant.....	84	88	107	80	84	71	83	94	83	75	88	80	540	540	1,006	524	480	6	6	714	779	2	16	1
Greene.....	93	90	75	71	69	70	87	82	71	97	94	69	497	490	987	497	483	.....	.....	862	880	58	70	2
Hamilton.....	37	32	52	49	40	39	42	31	43	33	31	43	255	232	487	254	231	1	1	474	477	3	1	1
Hancock.....	26	31	27	40	39	23	26	30	33	25	32	29	182	179	361	182	178	.....	.....	352	352	6	6	.....
Harrison.....	33	30	31	36	32	31	30	38	35	44	33	35	210	196	406	206	195	4	1	397	398	2	2	1
Hendricks.....	33	32	36	38	38	38	32	31	37	29	32	27	202	200	411	201	206	1	1	406	407	1	1	1
Henry.....	57	48	58	51	54	51	58	57	60	62	50	35	309	341	650	309	333	.....	.....	635	639	5	4	3
Howard.....	54	46	52	47	63	65	62	67	76	64	55	49	369	326	695	367	323	2	3	671	675	17	15	2
Huntington.....	57	41	51	56	67	48	57	43	49	47	45	65	314	311	625	314	311	.....	.....	606	612	8	4	3
Jackson.....	66	40	61	41	43	46	35	57	45	53	34	53	305	274	579	304	274	1	.....	560	571	5	.....	6
Jasper.....	22	22	17	17	23	27	21	23	23	23	21	20	118	141	259	118	141	.....	.....	246	251	11	7	1
Jay.....	47	43	46	47	52	42	51	46	49	40	30	45	302	256	558	301	256	1	.....	550	553	6	4	1
Jefferson.....	39	40	39	45	38	29	30	39	31	30	22	34	200	196	396	197	189	3	7	388	390	4	4	2
Jennings.....	23	20	26	27	29	26	23	24	28	29	27	30	165	156	321	163	152	2	4	313	318	3	1	3
Johnson.....	33	33	33	26	38	42	36	33	32	32	24	34	205	191	396	201	186	4	5	387	390	4	2	1
Knox.....	102	83	80	76	82	90	78	97	106	85	100	86	562	503	1,065	557	503	.....	.....	1,024	1,035	30	21	5
Kosciusko.....	56	50	61	40	36	39	48	39	37	36	47	33	277	245	522	277	245	.....	.....	510	509	6	7	.....
Lagrange.....	30	23	17	34	28	27	35	29	33	26	30	24	166	170	336	166	170	.....	.....	325	330	3	2	4
Lake.....	147	128	142	137	125	136	169	178	176	154	151	166	924	885	1,809	921	883	3	2	899	937	881	832	11
Laporte.....	74	67	67	67	98	80	64	82	78	80	62	90	487	432	919	487	432	.....	.....	691	705	222	209	1
Lawrence.....	65	71	71	54	77	66	65	83	83	64	56	57	428	393	821	426	393	2	1	794	800	15	10	1
Madison.....	118	116	124	115	111	103	128	148	118	113	106	106	698	725	1,423	690	720	.....	.....	1,368	1,368	54	43	8
Marion.....	448	436	479	448	418	505	513	478	441	427	407	435	2,784	2,651	5,435	2,575	2,437	209	224	4,307	4,304	541	484	2
Marshall.....	39	41	45	42	37	33	45	43	43	32	50	42	238	254	492	238	254	.....	.....	475	479	9	6	1
Martin.....	34	24	31	28	36	36	29	36	29	27	30	40	188	190	368	188	190	.....	.....	364	364	.....	.....	.....
Miami.....	42	47	61	58	50	46	55	62	49	46	43	62	313	290	621	327	288	4	2	589	595	22	22	6
Monroe.....	60	65	54	39	52	58	54	52	57	64	45	60	313	347	660	310	344	3	3	645	653	7	6	6
Montgomery.....	35	35	45	50	52	47	44	50	51	68	39	56	309	281	590	304	277	5	4	573	583	6	4	8
Morgan.....	47	26	43	40	33	44	34	39	43	32	24	27	236	196	432	236	196	.....	.....	424	426	1	1	3
Newton.....	21	25	28	15	7	20	14	17	18	21	18	20	110	114	224	109	114	1	.....	213	216	4	3	2
Noble.....	35	35	35	33	44	36	35	42	46	43	35	40	246	213	459	246	213	.....	.....	442	447	11	6	.....
Ohio.....	6	12	9	3	5	8	10	6	7	6	3	3	38	30	80	38	30	4	2	78	79	1	1	.....
Orange.....	42	29	40	23	26	40	40	25	42	37	42	38	203	221	424	203	220	1	.....	416	418	1	1	.....
Owen.....	26	25	32	19	18	18	21	28	16	15	13	12	147	96	243	146	96	1	.....	239	240	1	1	.....

TABLE A—Continued.

COUNTIES.	1911												Sex.		Color.		NATIONALITY OF PARENTS.						Not Re-ported.			
													Males.	Females.	Total No. Children.	White.		Colored.	American.		Foreign.					
																Males.	Females.		Males.	Females.	Males.	Females.				
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.														
Park...	40	26	27	37	32	32	39	38	29	33	30	198	203	401	196	203	383	385	2	...	13	12	1	...	...
Perry...	37	42	31	25	28	28	40	32	38	44	33	41	208	211	419	207	210	413	414	1	...	1	1	1	...	...
Pike...	45	38	45	32	43	48	36	40	46	40	38	39	261	229	490	260	228	482	486	1	...	3	1	2	...	...
Porter...	23	29	32	28	28	29	33	28	29	30	20	29	175	154	329	175	154	281	296	45	...	45	30	1	...	1
Poey...	43	37	44	27	38	35	35	45	56	42	40	36	239	239	478	231	234	465	472	3	...	3	...	4	...	...
Puaski...	24	23	17	12	13	19	14	14	16	13	16	13	108	86	194	108	86	184	190	...	...	9	3	...	...	...
Putnam...	33	20	32	29	45	40	36	45	31	35	38	40	212	212	424	210	209	418	421	1	...	1	...	2	...	...
Randolph...	38	46	51	58	53	46	62	48	48	47	45	40	265	267	582	265	266	575	579	4	...	4	...	5	...	...
Ripley...	36	37	32	33	32	31	27	37	29	34	32	31	201	190	391	201	190	377	384	7	...	7	...	5	...	...
Rush...	30	36	32	30	31	29	39	35	40	42	31	27	222	180	402	219	177	399	398	1	...	1	2	...	...	...
Scott...	21	20	16	16	21	16	11	26	11	10	16	17	102	99	201	102	99	196	196	1	...	1	1	...	...	...
Shelby...	41	37	48	36	35	32	41	41	49	50	34	41	256	229	485	254	225	481	482	1	...	1	1	...	...	...
Spencer...	34	40	45	31	28	47	40	41	29	41	31	34	239	202	441	237	198	430	433	5	...	5	2	...	...	...
Stark...	17	22	23	17	17	16	32	24	32	17	25	25	148	119	267	147	120	220	226	40	...	40	34	...	...	...
Steuben...	28	14	27	17	26	17	26	23	19	21	20	17	129	126	255	129	126	250	250	1	...	1	...	...	...	...
St. Joseph...	201	150	208	171	184	186	171	195	201	160	175	176	1,114	1,064	2,178	1,109	1,062	1,220	1,207	5	...	2	...	928	861	12
Sullivan...	95	73	90	71	68	73	72	84	89	78	60	82	486	440	935	484	447	853	853	74	...	74	7	...	...	2
Switzerland...	22	11	22	24	20	16	13	14	16	11	25	22	118	98	216	118	98	208	209	1	...	1	...	...	...	...
Tipton...	47	46	56	44	45	54	40	54	40	45	52	44	329	266	595	327	264	548	559	37	...	37	30	4	...	...
Tipton...	32	25	36	25	45	34	35	32	28	30	39	23	191	193	394	191	193	378	382	3	...	3	...	...	...	...
Union...	4	12	6	11	7	11	17	17	17	11	10	6	66	63	129	65	61	124	125	2	...	2	1	...	...	...
Vanderburgh...	106	117	133	107	115	137	158	158	121	132	133	133	731	768	1,499	683	711	1,423	1,460	46	...	46	28	19	...	...
Vermillion...	48	46	48	41	27	35	51	46	40	51	41	25	223	276	499	222	273	368	378	127	...	127	118	1	...	...
Viro...	143	146	168	128	126	147	158	147	158	152	133	149	899	856	1,755	863	825	1,553	1,626	31	...	31	...	112	...	1

Wabash.....	35	24	40	37	39	40	54	45	44	34	49	40	233	248	481	232	248	1	461	468	10	6	3	
Warren.....	22	16	19	17	17	14	25	20	27	22	14	28	131	110	241	131	110	3	232	235	3	1	1	
Warrick.....	42	38	43	23	41	29	24	48	55	36	29	35	213	230	443	210	226	3	4	432	437	5	.....
Washington.....	40	34	39	23	27	25	39	38	44	28	33	25	206	196	400	206	196	.....	392	396	.....	3	.....
Wayne.....	78	62	77	73	77	76	69	71	87	66	63	67	442	424	866	426	408	16	16	819	826	28	26	5
Wells.....	31	40	41	38	50	35	31	30	35	41	41	29	257	206	442	237	208	.....	435	439	3	1	2
White.....	34	23	40	39	31	32	29	33	31	34	36	28	268	186	390	206	186	.....	370	378	13	8	4
Whitley.....	17	22	28	26	29	18	30	30	33	29	16	20	160	138	298	160	138	.....	290	291	2	2	1
Grand total.....	4,820	4,583	5,077	4,432	4,564	4,531	4,873	5,206	5,105	4,715	4,409	4,655	29,264	27,706	56,370	28,772	27,216	492	490	52,151	52,931	4,032	3,502	277

TABLE B.

*Births, Number of Children Born to Each Mother, Grouped Ages of Parents, Still, Plurality and Illegitimate Births,
for Year Ending December 31, 1911.*

COUNTIES.	Number of Children Born to Each Mother.																				
	Total Births.	First.				Second.				Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth and Over.	Not Reported.	
		First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.												Ninth.	Tenth.	Eleventh.	Twelfth and Over.	Not Reported.
Adams.....	515	119	96	81	62	52	29	31	18	8	7	9	3	5							
Allen.....	1,752	586	368	267	165	128	93	52	41	24	16	9	8	2							
Bartholomew.....	476	139	106	68	64	35	17	20	11	5	6	3	3	2							
Benton.....	248	63	54	32	19	12	12	12	6	1	1	1	1	1							
Blackford.....	336	88	89	42	38	23	19	14	8	5	6	6	1	1							
Bourne.....	481	139	108	83	51	31	27	21	9	7	1	2	2	2							
Brown.....	192	46	35	23	23	23	14	10	5	5	4	4	2	2							
Carroll.....	350	110	72	53	49	31	10	6	7	3	4	2	2	2							
Cass.....	741	228	188	121	63	63	24	23	9	8	6	9	4	4							
Clark.....	593	168	124	88	60	52	31	21	20	14	5	3	3	3							
Clay.....	687	169	140	118	72	62	40	33	20	14	10	6	6	6							
Clinton.....	519	166	114	76	53	41	27	19	11	8	1	3	3	2							
Crawford.....	282	67	64	52	33	21	17	10	10	6	2	1	1	1							
Davies.....	738	179	168	99	82	72	55	31	24	15	10	5	4	4							
Dearborn.....	400	98	99	64	45	36	21	14	8	9	3	3	7	7							
Deatur.....	327	80	82	51	40	23	15	13	9	4	5	5	3	3							
DeKalb.....	512	140	123	75	73	38	24	10	14	6	5	3	2	2							
Delaware.....	1,080	297	217	181	109	72	54	28	29	16	8	8	9	9							
Dubois.....	511	116	51	84	51	37	19	19	27	12	5	1	1	1							
Elkhart.....	1,022	304	274	160	94	55	54	37	15	16	9	3	3	5							
Fayette.....	315	101	78	52	25	20	14	10	10	4	1	1	1	1							
Floyd.....	578	190	120	85	50	42	35	24	11	14	3	3	3	4							
Fountain.....	387	99	91	62	37	28	26	17	10	8	3	2	2	5							
Franklin.....	247	59	49	46	27	21	13	8	8	3	3	3	4	4							
Fulton.....	352	102	80	56	42	21	16	12	7	8	5	5	6	1							

Gilson.....	725	195	129	132	89	65	55	20	20	11	6	3	6	1
Grant.....	996	273	229	166	117	66	38	19	38	16	56	10	6	2
Greene.....	982	233	196	157	133	68	38	25	38	22	6	5	6	2
Hamilton.....	478	138	112	77	60	25	23	13	10	15	6	1	4	4
Hancock.....	358	106	79	53	40	30	19	7	11	5	3	.....	5	3
Harrison.....	400	90	72	62	54	33	31	16	31	7	4	3	2	1
Headricka.....	408	88	98	70	48	47	22	5	13	7	7	3	1	3
Henry.....	643	298	167	96	72	39	35	8	11	8	2	3	2	1
Howard.....	690	213	166	104	74	47	29	13	24	12	10	3	.....	.....
Huntington.....	617	177	143	105	71	54	33	13	17	4	2	3	3	.....
Jackson.....	571	126	124	105	66	37	35	22	34	12	6	7	4	1
Jasper.....	258	66	38	35	25	25	14	7	9	5	7	.....	.....	.....
Jay.....	557	161	115	93	60	38	40	10	21	8	6	1	4	1
Jefferson.....	394	116	91	61	56	27	18	8	9	4	3	1	1	1
Jennings.....	319	72	68	48	38	28	26	14	14	6	4	3	.....	.....
Johnson.....	392	117	100	67	49	21	19	7	9	3	1	2	.....	1
Knox.....	1,059	286	238	168	117	71	64	37	43	25	15	4	7	.....
Kosciusko.....	516	148	116	94	50	27	36	16	16	11	7	2	3	.....
Lagrauge.....	332	99	71	51	42	23	15	8	13	5	5	4	4	.....
Lake.....	1,791	550	356	302	306	126	93	35	50	25	10	9	12	3
Laporte.....	914	268	181	142	95	58	56	29	44	14	14	8	7	3
Lawrence.....	810	197	169	138	96	59	50	40	40	15	13	7	6	.....
Madison.....	1,411	403	309	208	154	111	85	30	63	30	14	11	5	2
Marion.....	5,390	2,011	1,230	758	515	314	233	89	160	46	29	20	29	1
Marshall.....	486	137	106	80	45	33	36	11	11	16	9	3	4	1
Martin.....	364	90	74	45	53	29	23	15	17	10	5	4	3	.....
Miami.....	617	184	146	89	77	51	26	16	16	10	6	4	3	2
Monroe.....	659	170	118	109	81	63	39	22	30	19	10	4	4	.....
Montgomery.....	587	172	122	100	70	44	21	18	28	10	5	5	4	1
Morgan.....	428	115	88	75	43	35	30	11	17	4	6	5	1	2
Newton.....	219	56	38	50	29	18	11	6	9	4	3	.....	.....	.....
Noble.....	453	138	116	83	51	35	28	12	12	12	2	2	3	.....
Ohio.....	79	24	16	10	7	2	7	2	4	1	2	3	5	.....
Orange.....	418	101	85	56	67	28	32	10	22	8	7	3	3	.....
Owen.....	241	62	47	40	32	21	10	4	15	2	6	1	2	1
Parke.....	397	107	81	61	49	34	25	18	18	11	1	4	1	.....
Perry.....	415	100	83	65	56	31	29	21	21	15	4	4	1	2
Pike.....	485	110	94	79	65	42	28	27	27	11	12	7	3	.....
Porter.....	327	87	77	44	31	31	17	18	18	11	2	2	1	1
Posey.....	472	138	85	64	58	43	32	12	27	7	7	2	3	1

TABLE B—Continued.

COUNTIES.	Total Births.	Number of Children Born to Each Mother.										
		First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.
Pulaski.....	193	40	43	33	19	23	6	14	6	3	2	2
Putnam.....	421	106	93	52	55	39	29	20	17	6	4	1
Randolph.....	579	163	133	95	60	47	28	18	15	10	6	3
Ripley.....	389	97	72	61	52	35	27	16	7	10	6	2
Rush.....	400	126	88	51	53	25	21	17	11	2	2	2
Scott.....	197	45	40	32	29	18	13	12	4	1	3	3
Shelby.....	483	140	107	81	54	32	29	20	8	4	2	2
Spencer.....	435	103	94	61	61	31	39	20	17	7	3	2
Starks.....	280	78	46	29	37	26	17	8	7	10	3	1
Steuben.....	251	81	57	45	30	13	10	5	3	5	3	3
St. Joseph.....	2,160	590	463	365	247	147	107	86	50	41	21	16
Sullivan.....	927	241	173	143	129	80	45	47	26	16	10	1
Switzerland.....	209	69	41	27	24	5	20	13	12	7	5	1
Tipton.....	589	187	133	91	62	33	31	24	10	7	6	3
Tipton.....	382	110	83	60	38	28	16	17	12	8	3	3
Union.....	126	37	25	19	9	11	13	6	3	24	1	1
Vanderburgh.....	1,488	513	305	235	156	90	63	45	31	24	20	11
Vermillion.....	496	113	114	87	46	40	42	23	13	7	3	5
Vigo.....	1,739	530	368	264	195	135	80	71	40	26	13	9
Wabash.....	474	144	106	72	69	35	10	14	12	7	5	1
Warren.....	236	69	52	31	28	26	7	10	7	4	2	4
Warrick.....	437	104	86	64	59	39	29	17	16	10	6	5
Washington.....	395	110	96	65	37	29	20	19	8	6	6	2
Wayne.....	852	260	208	141	93	57	41	24	21	10	5	1
Wells.....	440	117	98	74	55	31	24	12	18	4	4	1
White.....	337	109	97	47	31	22	28	20	14	8	6	2
Whitley.....	293	88	69	43	31	27	15	12	3	2	2	4
Grand total.....	56,460	16,345	12,351	8,815	6,350	4,194	3,065	2,117	1,399	928	567	356
												154

TABLE B—Continued.

*Births, Number of Children Born to Each Mother, Grouped Ages of Parents, Still, Plurality and Illegitimate Births,
for Year Ending December 31, 1911.*

COUNTIES.	GROUPED AGES OF PARENTS.														Plurality Births.		Illegitimate Births.		Still-births.		
	Under 20.		20 to 30.		30 to 40.		40 to 50.		50 to 60.		60 to 70.		70 to 80.		Not Reported.		Males.	Females.	Males.	Females.	
	Fathers.	Mothers.	Fathers.	Mothers.	Fathers.	Mothers.	Fathers.	Mothers.	Fathers.	Mothers.	Fathers.	Mothers.	Fathers.	Mothers.	Fathers.	Mothers.					
Adams.....	3	37	215	278	209	271	68	28	14				2	4	1	6	4	5	3	10	6
Allen.....	14	149	802	983	655	537	227	78	32		3		1	18	5	4	14	10	11	29	19
Bartholomew.....	6	49	214	258	167	143	62	26	20		2			5		4	5	1	4	2	8
Benton.....	7	11	99	145	101	80	46	12	2							4	2			3	7
Blackford.....		47	161	180	114	91	39	13	7				1	7	5		4		5	3	2
Boone.....	4	59	233	275	160	129	67	14	12		1			4		5				5	3
Brown.....	6	26	78	98	66	56	34	11	3					2	1		3	2	2	3	5
Carroll.....	2	35	167	204	131	98	40	12	7					3		3	2	4	4	2	2
Cass.....	6	74	361	441	271	194	86	30	10		2			5	2	4	6	6	6	18	8
Clark.....	5	69	253	298	210	183	101	28	17		2			5	5		4	4	3	7	17
Clay.....	8	80	321	349	221	221	104	34	23		1	1		8	3	3	9	4	4	16	12
Clinton.....	6	64	252	293	179	137	66	24	11		1			4	1	7	7	5	3	9	9
Crawford.....	3	28	116	146	107	85	44	13	9		2			1		1	3			5	4
Darwin.....	5	72	332	410	262	216	104	38	21		4			10	2	10	6	7	7		9
Dearborn.....	2	33	165	218	151	122	62	18	12		1			7	9		7	5	1	7	9
Decatur.....	1	30	136	185	131	102	43	10	8		5			3		3	1	2		5	6
Dekalb.....	5	47	231	293	186	142	71	25	12		2			5	4	4	4	1	1	8	3
Delaware.....	23	130	464	578	367	274	126	44	25					5		6	9	5	9	12	12
Dillon.....	9	63	223	281	200	132	68	34	7		1		1	2	1	6	4	4	4	9	9
Elkhart.....	19	99	497	591	376	286	114	43	11		1		1	3	3	5	5	4	4	20	13

TABLE B—Continued.

COUNTIES.	GROUPED AGES OF PARENTS.														Plurality Births.		Illegitimate Births.		Still-births.	
	Under 20.		20 to 30.		30 to 40.		40 to 50.		50 to 60.		60 to 70.		70 to 80.		Not Reported.		Males.	Females.	Males.	Females.
	Fathers.	Mothers.	Fathers.	Mothers.	Fathers.	Mothers.	Fathers.	Mothers.	Fathers.	Mothers.	Fathers.	Mothers.	Fathers.	Mothers.	Males.	Females.				
Fayette.....	6	39	149	176	124	84	29	14	3	1	3	2	3	2	2	2	1	6	2	
Floyd.....	4	72	252	296	224	178	86	31	7	1	1	3	5	1	3	3	7	10	6	
Fountain.....	16	47	167	204	124	107	62	24	13	2	3	3	5	1	3	3	7	4	1	
Franklin.....	5	9	86	130	97	94	44	13	10	2	3	3	1	3	3	1	1	3	5	
Fulton.....	6	36	176	203	108	101	53	11	7	1	1	2	2	2	2	2	4	8	2	
Gilson.....	9	64	313	402	267	218	108	37	17	2	2	9	4	4	7	10	7	21	12	
Grant.....	18	104	455	567	348	268	127	53	39	3	3	6	4	4	13	7	4	5	21	
Greene.....	17	152	441	498	315	246	142	53	25	3	3	9	3	3	12	4	7	9	18	
Hamilton.....	6	40	233	275	170	135	62	27	5	2	1	2	1	2	9	9	2	3	10	
Hancock.....	5	37	163	200	130	106	48	15	10	2	2	3	2	2	3	3	1	5	11	
Harrison.....	5	33	154	200	162	142	66	25	10	3	3	10	3	2	7	5	2	9	3	
Hendricks.....	2	39	151	213	175	135	57	21	11	7	1	7	7	1	4	4	2	5	7	
Henry.....	10	92	321	368	222	164	74	18	6	3	3	7	3	7	9	5	7	11	11	
Howard.....	17	98	347	394	220	179	94	29	9	1	1	1	1	1	5	5	1	15	19	
Huntington.....	9	57	316	369	203	165	76	26	9	1	1	2	2	2	4	4	2	6	7	
Jackson.....	7	53	231	294	209	183	97	41	14	3	3	10	3	3	11	5	5	12	11	
Jasper.....	3	33	109	128	96	83	38	14	7	2	2	3	3	3	1	1	2	2	4	
Jay.....	8	70	266	319	191	137	80	31	7	1	1	4	4	1	3	3	6	8	1	
Jefferson.....	6	51	179	203	137	122	53	17	13	5	1	5	5	1	2	2	2	5	6	
Jennings.....	8	34	103	152	125	116	67	17	11	3	2	3	3	3	3	1	4	5	2	
Johnson.....	5	47	205	238	130	92	47	14	5	1	1	1	1	1	5	3	3	4	6	
Knorr.....	15	141	474	598	390	279	138	49	23	8	1	10	2	8	4	8	8	21	14	
Kosciusko.....	7	54	251	293	179	142	65	26	12	2	1	2	1	1	8	4	3	10	11	
Lagrange.....	3	31	145	187	125	101	45	12	9	3	3	5	3	3	3	5	3	8	3	
Lake.....	9	160	851	1,092	712	496	194	36	14	1	1	6	11	6	17	19	13	37	31	

Laporte.....	9	70	447	534	306	265	118	40	27	3	4	1	4	5	6	4	2	3	9	4
Lawrence.....	17	102	368	442	283	229	91	35	29	2	7	2	10	2	12	11	7	8	19	9
Nashon.....	25	174	660	762	605	468	184	48	25	4	1	3	10	2	13	11	15	11	29	20
Norton.....	62	600	2,584	3,091	1,975	1,466	634	219	72	12	3	3	48	13	51	39	85	124	115	75
Marshall.....	2	52	218	273	169	131	85	30	10	1	2	2	2	2	8	4	2	5	17	7
Martin.....	2	46	168	188	141	104	52	26	12	1	1	1	1	1	5	3	4	4	11	2
Miami.....	6	58	267	349	245	178	77	31	14	1	7	1	7	1	4	4	8	5	14	5
Monroe.....	18	94	290	539	223	181	105	44	16	2	7	1	7	1	1	4	8	14	7	7
Montgomery.....	8	66	261	321	206	173	78	25	18	2	14	2	14	2	1	2	11	4	14	2
Morgan.....	5	47	197	244	158	123	50	14	13	4	1	1	1	6	6	2	4	3	7	9
Newton.....	3	23	90	131	84	63	37	2	3	1	1	1	1	1	1	9	1	1	5	1
Noble.....	4	46	261	39	160	132	68	13	5	1	2	1	2	1	6	6	2	2	7	3
Ohio.....	1	5	27	39	34	29	15	6	2	1	1	1	1	1	6	6	3	1	11	3
Orange.....	4	41	176	221	164	130	63	28	9	2	1	1	1	1	6	6	3	1	3	3
Owen.....	7	27	98	127	86	71	37	15	6	2	5	1	5	1	3	1	3	2	6	5
Parke.....	5	53	175	208	126	114	71	27	16	1	1	1	2	2	2	6	3	4	4	7
Perry.....	4	36	156	211	172	140	64	25	10	1	5	3	5	3	3	5	3	2	2	7
Pike.....	20	99	239	353	153	117	92	30	19	1	2	4	4	2	4	4	10	6	16	6
Porter.....	1	17	138	175	125	115	60	20	12	1	1	1	11	2	5	7	2	7	6	1
Posey.....	6	52	199	255	178	139	64	26	13	1	1	1	2	1	3	7	6	7	7	5
Pulaski.....	2	15	80	106	67	55	30	17	3	1	1	1	1	1	2	2	2	3	10	2
Putnam.....	6	47	170	217	155	132	72	25	13	1	5	5	5	1	3	3	4	3	11	6
Randolph.....	13	66	272	310	189	170	75	29	18	1	3	3	3	1	3	3	3	5	11	9
Ripley.....	1	22	124	205	149	110	66	22	8	2	6	6	6	2	2	2	2	1	5	1
Rush.....	4	33	191	235	134	114	52	18	16	1	2	2	2	1	1	3	2	3	8	6
Scott.....	3	14	87	113	71	61	28	8	7	1	1	1	1	1	3	5	1	3	3	3
Shelby.....	11	50	226	270	170	135	54	15	10	1	3	3	3	1	1	3	4	4	11	8
Spencer.....	1	33	168	210	163	122	81	30	15	3	4	4	4	2	3	3	3	5	11	8
Starr.....	5	33	101	133	94	78	53	16	6	1	4	4	4	2	8	6	3	4	5	6
Steuben.....	3	26	123	144	87	69	28	11	7	1	3	3	3	1	5	6	3	1	1	2
St. Joseph.....	19	956	1,295	874	612	256	79	33	1	5	3	3	14	1	20	16	15	10	45	31
St. Louis.....	13	121	409	524	340	240	129	41	24	2	2	10	10	1	8	8	9	7	20	14
St. Vincent.....	2	19	100	134	83	66	45	24	5	1	1	1	1	1	8	6	9	7	20	14
Tippecanoe.....	5	44	272	330	212	167	78	28	16	2	1	1	1	1	7	5	6	3	4	6
Tipton.....	13	50	182	215	123	90	42	27	17	2	2	3	3	1	1	5	2	2	11	7
Union.....	3	16	43	65	53	40	23	5	4	1	1	1	1	1	3	3	2	2	2	1
Van derburgh.....	29	185	679	825	535	403	191	74	30	5	1	1	28	1	11	11	35	29	20	20
Vanderburgh.....	3	66	228	267	195	142	56	21	11	2	2	2	2	2	2	4	2	3	4	5
Vigo.....	41	241	811	973	601	461	225	62	41	1	1	1	19	2	22	10	20	25	51	16

TABLE B—Continued

COUNTIES.	GROUPED AGES OF PARENTS.														Plurality Births.		Illegitimate Births.		Still-births.	
	Under 20.		20 to 30.		30 to 40.		40 to 50.		50 to 60.		60 to 70.		70 to 80.		Not Reported.		Males.	Females.	Males.	Females.
	Fathers.	Mothers.	Fathers.	Mothers.	Fathers.	Mothers.	Fathers.	Mothers.	Fathers.	Mothers.	Fathers.	Mothers.	Fathers.	Mothers.	Males.	Females.				
Wabash	8	56	220	251	166	137	66	29	6	2	1	5	1	8	3	6	3	6	7	
Warren	6	29	106	137	84	58	30	10	6	2	1	4	2	8	3	1	3	6	7	
Warrick	10	43	169	210	171	164	70	18	13	3	2	2	2	8	3	2	3	6	6	
Washington	5	34	170	229	141	113	56	18	12	3	3	8	1	8	2	4	3	5	7	
Wayne	12	94	415	475	309	243	99	86	12	2	3	3	4	13	15	6	8	15	5	
Wells	6	39	225	270	142	111	59	18	5	2	3	3	2	3	4	2	4	2	5	
White	1	39	160	212	149	118	54	15	14	1	1	8	3	8	4	6	1	5	7	
Whitley	5	31	135	168	108	81	35	10	5	1	5	5	3	5	6	2	2	7	3	
Grand total	779	6,110	25,618	31,410	20,547	16,192	7,615	2,597	1,237	5	145	22	497	146	547	473	494	1,075	724	

TABLE C.

*Number of Births and Rates per 1,000 Population by Counties,
for Year 1911.*

COUNTIES.	Number.	Rate.	COUNTIES.	Number.	Rate.
NORTHERN COUNTIES.....	19,224	20.7	CENTRAL COUNTIES—Cont.		
Adams.....	520	23.8	Madison.....	1,423	21.8
Allen.....	1,761	18.8	Marion.....	5,435	20.6
Benton.....	251	19.7	Monroe.....	660	28.1
Blackford.....	336	21.2	Montgomery.....	590	20.1
Carroll.....	353	19.6			
			Morgan.....	432	20.4
Cass.....	746	20.5	Owen.....	243	17.2
DeKalb.....	516	20.5	Parke.....	401	18.0
Elkhart.....	1,027	20.9	Putnam.....	424	20.5
Fulton.....	355	21.0	Randolph.....	582	20.0
Grant.....	1,006	19.5	Rush.....	402	20.7
Howard.....	695	20.9	Shelby.....	485	18.0
Huntington.....	625	21.5	Tippecanoe.....	595	14.8
Jasper.....	259	19.8	Tipton.....	384	21.9
Jay.....	558	22.3	Union.....	129	20.6
Kosciusko.....	522	18.6			
			Vermillion.....	499	26.4
Lagrange.....	336	22.1	Vigo.....	1,765	19.9
Lake.....	1,809	21.8	Warren.....	241	22.1
Laporte.....	919	20.0	Wayne.....	866	19.7
Marshall.....	492	20.3			
			SOUTHERN COUNTIES.....	15,198	23.0
Miami.....	621	21.1	Clark.....	597	19.7
Newton.....	224	21.3	Crawford.....	287	23.7
Noble.....	459	19.1	Davies.....	746	26.8
Porter.....	329	16.0	Dearborn.....	406	18.9
			Dubois.....	516	26.0
Pulaski.....	194	14.5			
Starke.....	267	25.2	Floyd.....	581	19.1
Steuben.....	255	17.8	Gibson.....	732	24.2
St. Joseph.....	2,178	20.5	Greene.....	960	26.0
			Harrison.....	406	20.0
Wabash.....	481	17.8	Jackson.....	579	23.4
Wells.....	442	19.7			
White.....	390	22.1	Jefferson.....	396	19.3
Whitley.....	298	17.6	Jennings.....	321	22.6
CENTRAL COUNTIES.....	22,548	20.2	Knox.....	1,065	27.1
Bartholomew.....	479	19.3	Lawrence.....	821	26.8
Boone.....	486	19.7	Martin.....	368	28.4
Brown.....	193	24.2			
Clay.....	693	21.2	Ohio.....	80	18.4
Clinton.....	523	19.6	Orange.....	424	24.6
			Perry.....	419	23.1
Decatur.....	329	17.5	Pike.....	490	24.9
Delaware.....	1,038	20.1	Posoy.....	478	22.0
Fayette.....	316	21.9			
Fountain.....	392	19.1	Ripley.....	391	20.1
Franklin.....	248	16.1	Scott.....	201	24.1
			Spencer.....	441	21.3
Hamilton.....	487	18.0	Sullivan.....	935	28.8
Hancock.....	361	18.9			
Hendricks.....	411	19.7	Switzerland.....	216	21.7
Henry.....	650	21.8	Vanderburgh.....	1,499	19.3
Johnson.....	396	19.4	Warrick.....	443	20.2
			Washington.....	400	22.9
STATES.....	56,970	21.0	HIGHEST RATE— Sullivan County.....	935	28.8
			LOWEST RATE— Pulaski County.....	194	14.5

TABLE D.

Marriages by Months, Color and Nationality, for the Year Ending December 31, 1911.

COUNTIES.	1911.												Color.		NATIONALITY.						Total.		
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	White.	Colored.	American.		Foreign.		Not Reported.				
															Grooms.	Brides.	Grooms.	Brides.	Grooms.	Brides.		Grooms.	Brides.
Adams.....	14	13	10	12	19	12	11	12	16	23	12	25	179	133	139	28	22	18	18	179	679		
Allen.....	56	53	47	70	68	137	72	58	92	112	90	76	918	13	896	44	44	1	1	931	1,209		
Bartholomew.....	17	17	16	25	19	30	11	15	17	23	22	32	240	4	240	241	4	3			244		
Benton.....	21	16	5	4	5	10	4	7	15	15	2	14	117	1	116	118	2				118		
Blackford.....	11	18	18	15	16	18	6	9	17	14	18	19	179		176	172	3	7			179		
Boone.....	20	13	14	13	12	22	9	16	16	19	14	25	193		179	179			14	14	193		
Brown.....	6	3	6	2	4	6	2	3	6	4	2	7	51		27	27			24	24	51		
Carroll.....	7	19	14	12	8	9	8	12	8	14	17	15	143		142	143	1				143		
Cass.....	33	29	24	26	33	34	38	34	37	40	23	48	393	6	331	339	31	22	37	38	399		
Clark.....	63	96	55	55	69	91	94	140	118	135	145	149	1,039	170	1,194	1,202	13	6	2	1	1,209		
Clay.....	39	22	26	22	23	18	24	21	22	21	32	34	302	2	297	296	7	8			304		
Clinton.....	23	23	23	21	10	22	15	18	26	27	21	36	263	2	265	265					265		
Crawford.....	14	10	8	9	11	10	8	9	12	7	8	12	118		73	80	33	27	12	11	118		
Davies.....	23	23	8	13	29	19	12	15	17	25	26	21	222		222	222					222		
Dearborn.....	10	16	6	22	11	16	11	12	21	20	16	14	174	1	174	175	1				175		
Deatur.....	9	7	5	20	10	9	10	14	18	9	7	10	128		128	128					128		
DeKalb.....	17	18	12	24	20	29	17	18	13	17	31	23	239		233	236	6	3			239		
Delaware.....	50	37	34	47	31	60	41	31	48	56	47	49	505	26	527	527					531		
Dubois.....	11	16	5	5	27	19	6	10	15	14	14	14	149		149	149					149		
Elkhart.....	21	24	30	30	14	62	42	39	34	42	55	58	448	3	302	293	29	23	120	135	451		

Fayette	3	10	5	10	3	7	4	11	10	4	9	19	93	2	95	95	4	3	2	3	95
Floyd	27	16	17	17	23	38	21	29	26	47	23	23	286	21	301	301	5	4		307	
Fountain	16	11	29	11	11	29	8	14	16	18	19	28	200	1	196	197	19	19		201	
Franklin	30	5	5	5	11	14	12	12	10	8	10	6	111		182	92	11			111	
Fulton	14	14	7	17	12	15	10	13	17	17	10	18	158		158	158	19	19		158	
Gibson	16	15	15	22	16	15	32	24	33	14	26	32	244	16	259	259	1	1		290	
Grant	31	42	43	37	38	40	33	48	55	44	30	40	485	16	493	490	3	5	5	501	
Greene	26	31	35	30	27	20	23	33	35	27	27	33	343		326	331	12	7	5	543	
Hamilton	14	23	17	21	13	14	17	26	25	19	31	28	235	11	74	76	2		170	246	
Hancock	19	21	14	26	11	18	8	15	17	20	23	15	205	1	204	204	2	2		266	
Harrison	7	9	9	9	6	7	9	6	11	9	4	20	104	3	107	107				107	
Hendricks	15	14	4	12	13	13	9	12	13	15	11	13	138	1	139	139				139	
Henry	14	17	11	46	16	26	21	25	28	13	27	24	267	1	177	178	3	2	88	288	
Howard	24	31	21	35	28	31	20	31	32	36	35	34	358	9	357	358	10	9		367	
Huntington	12	18	21	17	28	12	12	23	27	22	20	29	251		250	251	1			251	
Jackson	19	18	20	14	10	10	15	17	16	20	16	16	199	1	200	199		1		200	
Jasper	10	7	9	4	9	8	9	7	8	15	6	15	107		108	107	2			107	
Jay	17	21	12	19	19	22	17	13	17	15	21	28	216	2	168	169	2	1	47	217	
Jefferson	14	14	17	13	17	25	14	16	23	20	19	28	209	10	217	219	2			219	
Jennings	9	9	8	9	6	12	8	8	14	16	12	16	123	4	124	124	1	1	2	127	
Johnson	16	9	14	11	7	14	8	19	15	9	16	14	148	4	152	152				152	
Knox	42	41	37	30	32	68	34	38	48	55	51	50	515	11	516	520	10	6		526	
Kosciusko	26	15	17	30	11	23	20	12	18	21	21	20	256		255	255			1	256	
Lake	9	14	15	10	13	22	8	12	13	11	13	17	154		153	154	1			154	
Lagrange	144	165	129	161	181	189	168	142	167	186	182	148	1,917	45	1,407	1,453	555	509		1,962	
Laporte	48	28	22	38	37	71	42	55	42	56	47	38	521	3	423	457	101	67		524	
Lawrence	20	16	24	25	24	26	23	31	38	30	46	332	1	331	331	2	2			333	
Madison	47	44	53	55	32	71	35	69	59	60	55	75	632	12	623	631	21	13		644	
Marion	207	228	172	242	216	433	203	242	231	410	324	210	2,836	372	2,975	3,047	217	142	16	3,208	
Marshall	15	14	22	20	15	21	13	15	20	18	23	23	219		215	219	4			219	
Martin	7	11	18	17	7	10	4	7	10	12	16	18	137		137	137				137	
Miami	17	17	11	28	18	20	19	28	30	30	38	37	294	3	288	295	9	2		297	
Monroe	22	23	12	21	19	24	32	18	21	35	17	17	256	6	257	261	6	1		262	
Montgomery	14	15	19	16	18	24	13	23	24	19	22	33	232	8	237	238	3	2		240	
Morgan	9	16	9	14	15	18	22	12	25	16	13	22	190	1	189	190	2	1		191	
Newton	10	11	5	17	1	6	1	3	5	11	9	10	74		73	74	1			74	
Noble	15	14	10	17	7	24	15	8	10	13	22	25	180		177	179	3	1		180	
Ohio	12	2	2	2	1	5	3	5	1	5	5	5	37		38	38				38	
Orange	14	14	11	13	13	13	6	27	8	15	10	16	170	2	172	172				172	
Owen	8	14	8	6	6	10	6	8	11	10	14	7	107	1	107	108	1			108	

TABLE D—Continued.

COUNTIES.	1911.												COLOR.		NATIONALITY.				Total.				
													White.	Colored.	American.		Foreign.			Not Reported.			
															Grooms.	Brides.	Grooms.	Brides.		Grooms.	Brides.	Grooms.	Brides.
January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.			Grooms.	Brides.	Grooms.	Brides.	Grooms.	Brides.				
Parke	11	12	9	16	7	5	15	15	9	22	17	19	153	4	149	151	8	5			1	157	
Perry	6	11	18	15	15	17	7	13	14	21	24	28	169	2	168	169	1				37	169	
Pike	17	4	17	14	13	10	11	9	9	10	17	17	160	2	109	125	1		52			162	
Porter	12	7	12	17	15	28	12	14	20	20	14	18	189		159	169	30	20				169	
Posey	27	23	19	23	23	18	31	25	32	43	26	31	297	24	188	188			133			321	
Pulaski	7	9	6	6	16	14	9	6	14	18	8	17	120	1	127	128	3	2				130	
Putnam	16	6	14	14	16	16	21	9	14	17	20	23	186		166	186						186	
Randolph	17	21	24	24	14	24	22	23	20	27	23	33	268	3	271	271						271	
Ripley	14	9	8	12	6	7	1	7	17	10	13	2	106		106	105		1				106	
Rush	11	11	7	7	11	15	9	17	10	25	22	13	158		158	158						158	
Scott	7	7	10	4	4	1	8	6	5	5	9	11	77		77	77						77	
Shelby	23	26	16	25	18	24	22	17	19	39	18	29	267	9	265	272	7		4		4	276	
Spencer	23	33	18	17	28	21	25	31	31	31	23	39	298	22	167	167			153			320	
Starke	12	4	4	7	6	7	11	5	6	9	7	6	83	61	60	60	22	23				83	
Steuben	11	6	11	15	10	7	6	10	10	14	12	12	122		121	121	1	1				122	
St. Joseph	48	55	73	33	67	109	55	101	69	71	81	112	862	12	646	703	228	171				874	
Sullivan	37	23	36	25	14	19	28	32	31	30	35	33	339	4	323	334	19	9	1			343	
Switzerland	3	5	3	3	3	3	1	1	5	6	9	5	46		46	46						46	
Tipton	22	33	21	32	26	54	18	28	37	40	39	33	380	3	356	370	27	13				383	
Union	14	16	14	14	11	17	14	12	11	20	22	30	195		195	195						195	
Vanderburgh	4	5	1	2	2	1	3	5	4	7	6	3	41	2	43	43						43	
Vermillion	76	79	51	110	54	166	92	70	76	123	101	152	1,047	93	1,009	1,041	131	99			1	1,140	
Warrick	10	17	9	10	8	25	12	12	12	15	9	11	148	2	119	125	20	24			1	150	
Warrick	82	78	89	90	83	106	86	105	101	116	93	133	1,123	40	1,074	1,104	77	50			8	1,162	

TABLE E.
Marriages, Grouped Ages, for the Year Ending December 31, 1911.

COUNTIES.	Under 20.		20 to 30.		30 to 40.		40 to 50.		50 to 60.		60 to 70.		70 to 80.		80 and Over.		Not Reported.		Total.
	Grooms.	Brides.	Grooms.	Brides.	Grooms.	Brides.	Grooms.	Brides.	Grooms.	Brides.	Grooms.	Brides.	Grooms.	Brides.	Grooms.	Brides.	Grooms.	Brides.	
Adams.....	4	43	144	121	22	7	6	4	2	4	1	3	3	1	1	1	1	1	179
Allen.....	12	135	663	652	166	92	54	40	25	8	10	5	3	1	2	1	1	1	831
Bartholomew.....	15	64	161	127	40	34	16	12	5	4	5	3	3	1	2	1	1	1	244
Benton.....	1	19	89	82	21	13	4	3	3	1	3	2	1	1	1	1	1	1	118
Blackford.....	19	58	115	88	23	20	11	7	8	2	3	2	2	1	1	2	1	2	179
Boone.....	8	54	135	105	19	17	14	10	8	2	5	5	3	1	1	1	1	1	193
Brown.....	17	38	27	5	2	1	1	3	1	2	3	1	3	1	1	1	1	1	151
Carroll.....	2	22	115	107	15	9	5	3	5	1	5	1	1	1	1	1	1	1	143
Cass.....	8	90	273	219	59	40	28	34	21	11	5	5	4	2	1	1	1	1	399
Clark.....	16	539	923	537	190	98	60	29	14	6	4	4	4	2	1	1	1	1	1,209
Clay.....	6	69	208	186	49	23	18	16	11	6	8	2	2	1	1	2	1	1	304
Clinton.....	6	69	210	164	27	18	11	9	5	2	5	3	1	1	1	1	1	1	265
Crawford.....	57	57	29	28	14	14	8	11	7	7	3	1	2	2	1	1	1	1	118
Daviess.....	11	63	152	119	35	24	14	11	6	3	2	1	2	2	1	1	1	1	222
Dearborn.....	19	19	103	119	63	28	10	3	6	4	2	1	1	1	1	1	1	1	175
Decatur.....	5	28	89	81	17	8	10	4	4	6	1	1	2	1	1	1	1	1	128
Dekalb.....	7	56	171	150	38	19	11	6	5	4	4	4	2	1	1	1	1	1	239
Delaware.....	17	134	360	298	84	57	31	24	21	17	13	6	5	2	1	3	1	3	531
Dubois.....	4	45	113	86	22	8	5	4	3	3	7	5	3	2	1	3	1	3	149
Elkhart.....	5	76	305	290	80	51	25	19	21	17	7	5	3	1	5	3	3	3	451
Fayette.....	2	22	62	54	15	10	8	5	3	3	4	3	2	1	1	1	1	1	95
Floyd.....	6	67	199	169	45	40	28	15	18	8	6	6	3	1	1	4	4	4	307
Franklin.....	7	58	139	113	30	15	12	8	5	5	6	2	1	1	1	1	1	1	201
Franklin.....	1	19	77	73	18	11	10	4	2	4	3	4	3	1	1	1	1	1	111
Fulton.....	3	38	116	97	17	12	8	4	6	3	4	1	3	2	1	1	1	1	158

TABLE E—Continued.

COUNTIES.	Under 20.		20 to 30.		30 to 40.		40 to 50.		50 to 60.		60 to 70.		70 to 80.		80 and Over.		Not Reported.		Total.
	Grooms.	Brides.	Grooms.	Brides.	Grooms.	Brides.	Grooms.	Brides.	Grooms.	Brides.	Grooms.	Brides.	Grooms.	Brides.	Grooms.	Brides.	Grooms.		
Pulaski.....	3	52	87	58	21	14	7	4	3	2	1	1	1	1	8	1	130		
Putnam.....	12	52	112	102	40	16	10	10	10	4	2	2	1	1	1	1	186		
Randolph.....	6	63	193	165	38	17	13	12	12	11	5	3	4	1	15	1	271		
Ripley.....	1	26	73	53	22	8	8	3	2	2	2	1	1	1	1	1	106		
Rush.....	3	42	112	88	20	14	12	7	4	4	6	2	1	1	1	1	158		
Scott.....	2	27	53	39	13	3	1	1	2	5	3	2	2	1	1	1	77		
Schuyler.....	12	75	192	153	37	23	18	15	9	6	6	5	2	1	1	1	276		
Spencer.....	14	107	231	176	46	25	13	2	9	4	6	3	1	1	1	3	320		
Starke.....	1	27	60	44	15	9	4	1	1	1	1	1	1	1	1	1	83		
Steuben.....	2	27	81	68	18	12	10	9	7	3	3	3	1	1	1	1	122		
St. Joseph.....	13	181	591	534	184	100	38	35	30	13	11	9	5	2	2	2	874		
Sullivan.....	18	143	252	153	43	26	16	12	10	5	2	2	2	1	1	1	343		
Switzerland.....	7	74	32	27	4	7	5	1	1	2	2	2	2	1	1	1	46		
Tippacanoe.....	7	74	255	234	63	39	27	21	21	11	6	2	3	2	1	1	383		
Tipton.....	18	68	125	97	29	16	10	4	6	3	1	5	6	1	1	1	195		
Union.....	1	6	37	34	2	2	1	2	1	1	1	1	1	1	1	1	43		
Vanderburgh.....	17	217	783	738	226	110	70	51	24	12	11	5	3	1	6	6	1,140		
Vermillion.....	1	44	107	85	30	14	8	6	3	1	2	1	1	1	1	1	160		
Vigo.....	59	347	727	593	228	124	84	57	35	26	24	7	1	1	4	8	1,162		
Wabash.....	7	55	172	152	34	19	13	13	9	1	2	3	2	2	4	4	243		
Warren.....	5	29	49	34	11	3	2	3	2	2	1	1	1	1	1	1	70		
Warrick.....	5	54	138	111	26	17	15	4	7	3	1	1	2	1	4	4	194		
Washington.....	13	53	116	92	23	12	8	7	6	1	1	1	1	1	10	11	178		
Wayne.....	8	84	246	214	79	54	25	17	12	8	7	3	2	1	2	2	381		
Wells.....	7	58	171	146	39	18	11	7	1	1	1	1	1	1	21	22	251		
White.....	6	38	98	86	23	6	7	6	3	1	2	1	1	1	1	3	141		
Whitley.....	1	24	115	104	18	9	6	3	1	1	1	1	1	1	1	1	143		
Grand total.....	877	7,373	19,631	16,387	5,062	3,127	1,824	1,199	868	525	450	226	146	24	17	3	104	145	38,999

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